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ARTICLES

BOOK REVIEWS

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Editorial

In accordance with our mission of representing diverse perspectives and research traditions in applied linguistics, this issue presents three studies that approach well-established areas of research in new and illuminating ways.

The application of connectionist approaches to second language acquisition is relatively new. Inspired by an observation by Mike Long regarding the significance of acquisition orders, and based on empirical findings regarding the longitudinal development of past time expression in the acquisition of English as a Second Language, Dean Mellow and Karen Stanley propose a new framework for a connectionist approach to second language acquisition, which they call the Sign-based, Connectionist, Environmentalist, and Compositionist (SCEC) framework. Relying upon the incremental learning of form-function mappings based on the context and characteristics of input, the framework builds upon and extends the Competition Model, an influential connectionist approach to language acquisition. Mellow and Stanley suggest that the SCEC framework can provide insight into developmental sequences within the acquisition of a form such as the simple past tense, can explain the order of acquisition of various past tenses, and can account for the effects of task variation.

While there has been extensive work done on discourse markers from a functional grammar perspective, there have to date been few studies that have compared the use of discourse markers in different contexts. Naoko Taguchi contributes toward filling this gap by examining discourse markers in three spoken registers of American English: family conversations, professor-student office hour transactions, and service encounters. Drawing upon the resources of corpus-based linguistics, Taguchi's quantitative analysis reveals that there are considerable differences in the frequency of occurrence of certain discourse markers across these three registers. To account for these differences, Taguchi conducts a qualitative analysis of her data, considering situational variables such as the relationship between the interlocutors and the purpose of the interaction. She concludes that there is a definite relationship between the distribution patterns of discourse markers and the situational characteristics of various registers and proposes that discourse markers could serve as indicators of register variation.

The study of idioms is another well researched area, but John Liontas argues that the lack of consensus among researchers on how to define the term *idiom* has hampered efforts to apply this research to the teaching of idioms to second language learners. Liontas therefore proposes a new category of idiom, which he calls *vivid phrasal idioms*, which, among other attributes, create a vivid mental image (e.g., *to rain cats and dogs*). As an example of how such a categorization might facilitate research into the second language teaching of idioms, he offers the results of his

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own empirical studies with learners of a variety of foreign languages, which suggest that the comprehensibility of a vivid phrasal idiom in a second language can be predicted based on the extent of its closeness to an idiom in the learners' native language. He concludes with a recommendation for a common research agenda for the study of idioms with the goal of designing teaching practices to promote idiomatic competence among second and foreign language learners.

Finally, we are pleased to welcome our newest staff member, Rosamina Lowi, who will be joining us as Assistant Editor. Rosie will be helping us to put together the next issue of IAL and will eventually take over as a co-editor beginning with the June 2003 issue, replacing Debra Friedman. Welcome aboard, Rosie!

Debra Friedman
Emmy Goldknopf

Theory Development in Applied Linguistics: Toward a Connectionist Framework for Understanding Second Language Acquisition

Dean Mellow
Simon Fraser University

Karen Stanley
Central Piedmont Community College, Charlotte, North Carolina

This paper builds upon the Competition Model to create a broad framework that can inform a connectionist approach to second language acquisition research. After adopting three types of explanations for second language acquisition and outlining criteria for evaluating theories, the paper summarizes the Competition Model, a theory that utilizes those three types of explanations. The paper then summarizes findings regarding the longitudinal development of past time expression. To account for these patterns, the paper introduces additional constructs that are consistent with the Competition Model. Integrating "the competition of forms for expressing functions" with the notion of "cumulative complexity" (Brown, 1973), these new constructs are combined in the Sign-based, Connectionist, Environmentalist, and Compositionist (SCEC) Framework. The past time patterns are interpreted as manifestations of expansions in neural connectivity and modifications of connection strengths, changes that result from the associative learning that occurs during the processing of a large number of exemplars.

INTRODUCTION TO THEORY DEVELOPMENT

A number of researchers have recently presented arguments for and against the potential of connectionist models of learning for providing a theory of second language acquisition (SLA) (e.g., Broeder & Plunkett, 1994; N. Ellis, 1998, 1999; N. Ellis & Schmidt, 1997, 1998; Fantuzzi, 1992, 1993; Gasser, 1990; MacWhinney, 1989a; Mitchell & Myles, 1998; Ney & Pearson, 1990; Shirai, 1992; Shirai & Yap, 1993; Sokolik, 1990; Sokolik & Smith, 1992; Yap & Shirai, 1994). In order to contribute to SLA theory development, this paper attempts to extend connectionist principles to three dominant issues in SLA research: (i) developmental sequences within language elements; (ii) acquisition orders across language elements; and (iii) task variation. Responding to Mitchell and Myles's (1998, p. 99) observation that "at the moment, the route followed by L2 learners is not convincingly explained by such [cognitive] approaches," this paper proposes specific, falsifiable constructs that can account for existing findings related to developmental patterns in second language (L2) grammar.

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As explained in N. Ellis (1998), connectionism is one of a range of theoretical approaches which assume that complex linguistic representations are learned as a result of simple learning mechanisms being exposed to extensive language data as part of the social environment. This range of similar approaches has been described as emergentist (N. Ellis, 1998) and empiricist (MacWhinney, 1997). Among these approaches, the connectionist approach to development (e.g., Elman et al., 1998) provides computational tools for modeling or simulating the process of acquisition. Language acquisition is characterized as changes in patterns of connectivity and activation that can be represented and simulated by connectionist models. Learning is assumed to be a consequence of repeated neural network activation that results in stronger and more easily activated connections, in conjunction with learning algorithms such as backpropagation and Hebbian learning.[1] These learning algorithms are rules that adjust the connection strengths between the units in the network "in such a way as to decrease the discrepancy between the network's actual output and its desired output" (Elman et al., p. 66).

The framework developed in this paper adopts the connectionist assumption that the cognitive processes that result in SLA are relatively simple, associative processes that are not specific to language learning. In contrast, *general nativist* approaches propose *innate* modules and mechanisms which are self-contained cognitive units that perform relatively complex functions and which contribute to the learning of many different types of abilities (O'Grady, 1987, 1997; see also Mellow & Stanley, 2001). *Special nativist* approaches propose innate cognitive capacities that are only used in language learning and which perform highly complex learning or processing functions. Because the connectionist approach assumes only a relatively simple and limited cognitive contribution to language learning, this approach must rely extensively on two other types of explanations for SLA. First, in an *environmentalist* explanation for developmental patterns, learning is attributed to properties of the linguistic environment in which learners use language (Long, 1996; Mellow & Stanley, 2001). Environmentalist explanatory factors include input frequency, opportunities for language use, and contextualization of language use. Second, in a *compositionist* explanation, learning is attributed to the formal and functional properties that comprise the linguistic elements being learned (Brown, 1973; Mellow & Stanley, 2001; see the later section on explanatory factors for developmental patterns).

In addition, connectionist approaches to cognition do not assume that representations of language involve rules. Instead, as pointed out by Broeder and Plunkett (1994) and N. Ellis (1998, 1999), connectionist approaches are compatible with linguistic approaches that consider language to be mappings or pairings between form and function. One precise representation of a form-function mapping is the *sign* (Pollard & Sag, 1994; Saussure, 1915/1959). Given these different assumptions about representations and explanations for learning, this paper discusses the value of a connectionist explanation in relation to a general framework of assumptions that we call the Sign-based, Connectionist, Environmentalist, and

Compositionist Framework, or SCEC Framework. In Mellow and Stanley (2001), a preliminary version of this framework of assumptions was named the Functional-Cognitive (or FC) Model.

In this paper, the SCEC Framework is developed in relation to four criteria that SLA researchers have used to develop and evaluate theories: source, definitional adequacy, presence of empirical support, and scope (e.g., R. Ellis, 1994; Long, 1993; McLaughlin, 1987; Mitchell & Myles, 1998; Schumann, 1993, 1995). In this view, theory construction is fundamentally shaped by the source of theoretical constructs. Source disciplines such as generative linguistics, cognitive science, functional linguistics, and sociolinguistics often provide very different assumptions that lead to highly distinct (and perhaps even non-comparable) theories of SLA. After adopting assumptions, theories must meet two initial standards: definitional adequacy (clarity, specificity, and falsifiability) and presence of empirical support. The fourth criterion is the relative scope of a theory in terms of the range of empirical and logical issues that are addressed. These criteria may operate in a cyclic fashion. For example, after adopting foundational commitments and achieving definitional adequacy and empirical support, a theory may expand in order to account for additional empirical phenomena (i.e., increase its scope). The new constructs will need to remain consistent with the original source assumptions and will need to achieve definitional adequacy and have empirical support.

In order to illustrate this cyclic application of these criteria in the development of the SCEC Framework, the paper begins by summarizing the Competition Model, a well-developed theory that makes sign-based, connectionist, environmentalist, and compositionist assumptions about representations and learning processes. Next, the paper critiques the limitations of the Competition Model, especially with respect to its scope. The paper then summarizes a set of empirical findings regarding the longitudinal development of past time expression, including acquisition orders across sign networks and developmental sequences within sign networks. To account for these patterns, the paper introduces additional SLA constructs and findings that are consistent with the Competition Model. To achieve definitional adequacy, these new constructs are presented in a specific, falsifiable manner. An instantiation of the constructs provides a precise analysis of the past time findings. The SCEC Framework is comprised of the theoretical commitments of the Competition Model, as well as the new inter-related constructs. In the final section of the paper, the constructs and assumptions of the SCEC Framework are critically evaluated.

THE COMPETITION MODEL

An Overview of the Competition Model

The Competition Model is one of the most established models of SLA (cf. Braidi, 1999; Cook, 1996; Gass & Selinker, 1994; and esp. Correman & Kilborn,

1991; N. Ellis, 1999, p. 26; R. Ellis, 1994, pp. 377-378, 387; Segalowitz & Lightbown, 1999, p. 47). As specified by MacWhinney (1997), the Competition Model makes four major theoretical commitments. These assumptions reflect the sources of the theoretical constructs: cognitive science and functional linguistics.

The first major assumption of the Competition Model is that language learning is incremental, resulting from simple associative learning processes. Researchers have used connectionist models to create computationally explicit accounts of acquisition (Kempe & MacWhinney, 1998; MacWhinney, 1989a, 1997, 2000). The second major assumption of the Competition Model is that language and interlanguage systems are composed of form-function mappings. The Competition Model has, since its earliest formulations (e.g., Bates & MacWhinney, 1982; MacWhinney, Bates, & Kliegl, 1984, p. 128), emphasized the importance of using form-function mappings, rather than rules, as the units of analysis (McLaughlin & Harrington, 1989; cf. Selinker, 1972).

The third major assumption of the Competition Model is that language processing is restricted by capacity limitations. Although "virtually all models of language processing assume processing limits" (MacWhinney, 1997, p. 132), one strength of the Competition Model is the specific ways in which capacity limitations have been integrated into accounts of language performance and development. The fourth major assumption of the Competition Model is that developmental patterns result from the frequency in input (an environmentalist explanation) and from functional properties of the mappings being learned (compositionist explanations). In this input-driven approach to learning, "the basic claim of the Competition Model is that the system of form-function mappings embodied in language processing networks is acquired in accord with a property we will call *cue validity*" (MacWhinney, 1997, p. 122). In general, a cue (such as subject position) is a good or valid cue for a meaning (such as indicating the agent of a verb) if there is a high probability that the cue corresponds to the meaning. Cue validity is comprised of a number of cue distribution dimensions that include frequency and several functional properties of cues, including whether a cue such as singular subject-verb agreement morphology is contrastive in reference to other agreement marking (contrast availability; e.g. *The cat chases the dogs*) and whether a cue leads to the right functional choice whenever it is present (simple reliability).

Evaluation of the Competition Model and Connectionism

One of the strengths of the Competition Model is that its precise components can be tested and falsified (N. Ellis, 1999, p. 26; R. Ellis, 1994, p. 377; MacWhinney, 1997; Segalowitz & Lightbown, 1999, p. 47; cf. Gibson, 1992). In numerous empirical studies, the constructs of the Competition Model have been supported (for overviews, see MacWhinney, 1997, in press). Thus, the Competition Model meets our two initial standards of definitional adequacy and presence of empirical support.

In some of the critiques of the Competition Model and connectionism, many criticisms appear to be due to the source of the author's theoretical assumptions

(e.g., Gibson, 1992). Mitchell and Myles (1998, p. 80), in comparing connectionism to Universal Grammar approaches, have suggested that the absence of "rules" within connectionist models "goes against everything that linguists have taken as a starting point, namely that language is a set of rules (syntax, morphology, phonology) ... and that the task facing language learners is to extract those rules from the language around them in order to build up their own mental set of those rules." Mitchell and Myles' comments indicate that many SLA analyses have been framed within structural approaches to linguistics, with their emphasis on rules (see also N. Ellis & Schmidt, 1997, 1998; McLaughlin & Harrington, 1989; Rumelhart & McClelland, 1986a). As noted above, the Competition Model is not informed by linguistic approaches that use rules as linguistic representations.

Other critiques of the Competition Model and connectionism relate to four limitations of scope and reflect the nature of the empirical data that Competition Model studies have typically considered. First, although the Competition Model provides certain information about development over time (e.g., MacWhinney, 1997, pp. 118, 120-121, 129; and esp. the cross-sectional analyses in Kempe & MacWhinney, 1998), it has not yet provided extensive accounts of longitudinal phenomena such as acquisition orders and developmental sequences (N. Ellis, 1999, p. 26). Recently, MacWhinney (in press) reviewed a number of mental processes that might apply to language learning and discussed the importance of tracking the details of individual patterns of language learning.

Second, the linguistic scope of the Competition Model has been limited (e.g., Gibson, 1992). The Competition Model has tended to focus on the identification of the thematic role of agent, although some studies have considered other grammatical phenomena such as direct objects, pronominal assignment, and case marking (Kempe & MacWhinney, 1998; MacWhinney, 1997, pp. 116, 124).

Third, the Competition Model has tended to examine comprehension data rather than production data (Kempe & MacWhinney, 1998, p. 581; MacWhinney, 1997, p. 132; but see Bates & Devescovi, 1989; Sridhar, 1989). Fourth, the Competition Model has often studied the comprehension of relatively simple forms that may be ungrammatical, and has often utilized somewhat artificial tasks (R. Ellis, 1994, p. 378; Gibson, 1992; MacWhinney, 1997, pp. 124, 128-129, 131; McLaughlin & Harrington, 1989; see also the discussions of the use of artificial data in N. Ellis, 1999, pp. 32-33; N. Ellis & Schmidt, 1997; Hulstijn, 1997; Schmidt, 1994). Similarly, Mitchell and Myles (1998, p. 84) suggested that connectionist models "have been concerned with the acquisition of very simple, often artificial data, far removed from the richness and complexity of natural languages, and it is still questionable how much we can learn from these experiments about language learning in 'real' situations."

To overcome these limitations of scope, this paper summarizes data that are different than those typically addressed by the Competition Model and connectionist simulations: authentic, longitudinal, production data. To account for these data, the paper introduces additional SLA constructs and findings that are consistent

with the Competition Model, resulting in the specific set of constructs that comprise the SCEC Framework.

ADDITIONAL DATA TO BE ACCOUNTED FOR: THE DEVELOPMENT OF PAST TIME EXPRESSION

Past Time Sign Networks

The scope of the Competition Model is extended in this paper by considering developmental patterns in the expression of past time. To represent these patterns, the construct of the form-function mapping has been formulated as a sign. Originally proposed by Saussure (1915/1959), signs have been developed considerably within Head-driven Phrase Structure Grammar (HPSG) (e.g., Pollard & Sag, 1987, 1994; Sag & Wasow, 1999). Because the representations used in the Competition Model have indicated connections between different units of linguistic information and have been informed by Construction Grammar, Lexical Functional Grammar, and the work of Carl Pollard (MacWhinney, 1987, esp. pp. 264, 303; 1989b, esp. pp. 64, 76; in press), our use of HPSG is, in many respects, a continuation of these earlier representations.

Building from Pollard and Sag (1994, p. 15), Krieger and Nerbonne (1993), Krieger (1994), and De Kuthy (2002), signs are conceptualized in the SCEC Framework as structured complexes of phonological, morphological, syntactic, semantic, discourse, and phrase-structural information. Because the SCEC Framework utilizes a connectionist explanation of learning, it attempts to avoid or reduce the modularity of linguistic knowledge. Thus, one assumption of the SCEC Framework is that similar (although not identical) principles constrain word structure, sentence structure, and discourse structure. Therefore, utilizing ideas proposed in Krieger and Nerbonne and Krieger, signs in the SCEC Framework include bound morphemes as well as words and phrases. Within the SCEC Framework, language is conceptualized as a very complex network of signs, as well as a number of principles for the syntagmatic combination of signs into larger units. The SLA of some of these combinatorial principles was discussed by Mellow and Bae (2001) and Mellow (to appear).

HPSG representations of linguistic information stand in opposition to the types of rules and representations used in some special nativist theories. In particular, HPSG does not include representations that refer to phonologically abstract units or structure-destroying operations such as movement (Webelhuth, Koenig, & Kathol, 1998). In addition, HPSG sign analyses are especially appropriate because HPSG is neutral with respect to the cognitive explanation that is presumed to underlie grammatical knowledge (i.e., connectionism vs. special nativism: Sag & Wasow, 1999, p. 227). Thus, the assumption of connectionist learning principles may be consistent with the linguistic formalisms in HPSG.

The SCEC Framework accounts for English past time expressions that we describe as: (i) simple past, (ii) present perfect, and (iii) past perfect. Within the

sign-based framework that is developed in this paper, the simple past is a network of signs that pair morphological forms such as suffixation (of *-ed*) with the expression of completed events or states in the past. In her analysis of interlanguage data, Bardovi-Harlig (1997) proposes that simple past encodes the semantic feature *anterior* (i.e., it indicates that an event or situation took place prior to the time of speaking). Consequently, one sign that is part of the simple past network is represented in Figure 1. Following Krieger (1994), the features that are present are a subset of those that are required for a sign that is of the type affix.

Figure 1

affix	
PHON	*-ed*
SEM	anterior
ACAT	suffix
SUBCAT	verb

A sign that includes a subset of the features that are connected in the representation of an affix. PHON = phonology; SEM = semantics; ACAT = affix category; SUBCAT = subcategorization.

The form or structure within this sign is a linear string of phonological units (i.e., the PHON feature). For simplicity of representation, the value of this feature is presented here as an orthographic string: *-ed*. The function or meaning within this sign is a semantic feature (SEM): anterior. In addition, we have specified two morphological features and their values: affix category (ACAT; prefix or suffix) and the part of speech for which the affix is subcategorized (SUBCAT).

As noted above, the simple past is best considered as a network of signs. The network includes many related structures, including the allomorphs [t], [d], and [əd], as well as other morphological processes, including internal change and suppletion (although the output of highly idiosyncratic processes may best be represented in the lexical entries of the verb stems, cf. Pollard & Sag, 1987, p. 213). The simple past network also includes many related functions or semantic features; for example, Greenbaum (1996, p. 257) has pointed out that some meanings involve distancing, a metaphorical use of pastness. (For further discussion of the many past time functions, see Andersen & Shirai, 1994; Bardovi-Harlig, 1997; Binnick, 1991; Celce-Murcia & Larsen-Freeman, 1999; Comrie, 1976; Dahl, 1985; Klein, 1992, among others). The many combinations of these forms and functions comprise a complex network of signs. In the discussions that follow, we use the term *sign network* when we are emphasizing a set of related signs within a learner's overall interlanguage network (i.e., a paradigmatic set of connections between features). In contrast, we use the term *sign* to describe a specific feature structure that has been produced syntagmatically. This usage is similar to the distinction between a phoneme and an (allo)phone or between a morpheme and an (allo)morph.

Because a sign network such as the simple past is also related to other sign networks (such as past perfect and present perfect), the boundaries between these sign networks will overlap and could even be delimited in different ways depending upon the focus of investigation.

Examples of how these past time sign networks are expressed in English as a second language (ESL) writing are provided in (1) (the examples are from Stanley, 1998).

(1) a. I *when* home to relax. When I *got* home somebody <u>call</u> me and <u>(let)</u> massege in the answer machine.
b. One of the most important decision that **I have made** in whole my life *was* when I *decided* to (came) to U.S.A.

The meaning of the italics, underlining, bolding, and parentheses used in these examples are indicated in (2).

(2) Obligatory contexts for Simple Past: *Italics*
Obligatory contexts for Present Perfect: **Bold**
Obligatory contexts for Past Perfect: <u>Underlined</u>
Non-native-like overgeneralizations of Simple Past: (Parentheses)

Within the ESL examples provided, native-like uses of simple past are *got* in (1a) and *was* and *decided* in (1b). A non-native-like use is *when* (a spelling which suggests a non-native-like form of *went*) in (1a). In these passages, simple past forms have also been overgeneralized to contexts where they are non-native-like. In (1b) *to came*, the past time form *came* is overgeneralized to an infinitival form that is morphologically unmarked in native-like English. In (1a), the simple past form has been overgeneralized to a context for past perfect, as discussed below. These overgeneralizations indicate that non-native-like signs had been activated in the learner's interlanguage network: The learner paired forms with functions in non-native-like ways. From the perspective of the Competition Model, a non-native-like form has prevailed in the competition for expressing this function. Given this perspective, we use the term *overgeneralization* in a relatively broad manner, referring to the use of any form, not just well-developed forms, in contexts other than obligatory contexts.

The present perfect network of signs uses both syntactic forms and morphological forms. The auxiliary *have* or its partially suppletive form *has* precedes the past participial form of a verb. The past participial form is marked by either suffixation or suppletion. These forms can be paired with the expression of a situation in the past that has current relevance or is viewed from the perspective of present time. According to Bardovi-Harlig (1997, following Suh, 1992; cf. Binnick, 1991, esp. p. 102), the present perfect may encode two semantic features: *anterior* and *current relevance*. Consequently, examples of the phonological and semantic features that are part of the present perfect network are represented in (3).

(3) PHON *have VERB-ed*
SEM anterior, current relevance

Although not discussed here, the native-like English present perfect network also includes a number of other signs. Within the ESL examples provided, passage (1b) includes an obligatory context for present perfect. This example, *have made*, is a native-like sign, expressing a completed action in the past that maintains relevance to present time.

The past perfect (also known as the pluperfect) network of signs also uses both syntactic forms and morphological forms. The past participle of a main verb is preceded by *had*, the partially suppletive form of the auxiliary *have*. The past participle is formed through either suffixation or suppletion. These forms can be paired with the expression of an action completed in the past prior to some other past event (Celce-Murcia & Larsen-Freeman, 1999, p. 116). Thus, past perfect can encode both anterior and a feature that we tentatively refer to as *prior to point of reference* (following Reichenbach, 1947, as discussed in Binnick, 1991, pp. 110-118). Consequently, examples of the phonological and semantic features that are part of the past perfect network are represented in (4).

(4) PHON *had VERB-ed*
SEM anterior, prior to point of reference

Although not discussed here, the native-like English past perfect network also includes a number of other signs.

Within the ESL examples provided, passage (1a) includes two contexts for past perfect. The events referred to by the verbs *call* and *leave* took place prior to the event referred to by *get home*. These two forms are non-native-like. There is no auxiliary *had* preceding *call* and *call* is unmarked morphologically. The word *let* appears to be a misspelling of *left*, a partially suppletive form that is either the simple past form or the past participial form. In addition, there is no auxiliary *had* preceding *let*, and the possibility of ellipsis of *had* is eliminated because there is no auxiliary preceding *call*. Consequently, *let* is interpreted to be a simple past form overgeneralized to a past perfect context and is enclosed in parentheses. This overgeneralization indicates that a non-native-like sign had been activated in the learner's interlanguage network: The learner paired a form and a function in a non-native-like manner.

Using the semantic features described above and following the notion of cumulative semantic complexity proposed by Brown (1973), Table 1 provides a hierarchy of the semantic features of these meanings of the three sign networks. Although this feature analysis is simplified, this cumulative complexity analysis of some of the primary meanings of these sign networks provides a useful springboard to understanding developmental relations.

Table 1
A hierarchy of the semantic features of a subset of the meanings of three past time sign networks.

Sign Network	Semantic Features
Simple Past	Anterior
Present Perfect	Anterior, current relevance
Past Perfect	Anterior, prior to point of reference

Findings Regarding the SLA of Past Time Sign Networks

Within the many studies of the L2 expression of past time events or situations (e.g., Andersen & Shirai, 1994; Bailey, 1989; Giacalone Ramat, 1992; Hakuta, 1976; Klein, 1995; Meisel, 1987; Schumann, 1987), the longitudinal studies reported in Bardovi-Harlig (1994, 1997, 2000) and Mellow and Stanley (2002) may provide insight into the development of these three English past time sign networks. In particular, the findings reported in these longitudinal studies can be used to expand the scope of the data typically considered by the Competition Model. Bardovi-Harlig (1994, 1997, 2000) reported the results of analyses of a longitudinal corpus comprised of written and spoken data produced by 16 adult learners of English of four different first language backgrounds (Arabic, Japanese, Korean, and Spanish) for periods of time varying from 6 to 13.5 months. Mellow and Stanley (2002), a reanalysis of Stanley (1998), also reported the results of analyses of past time expression. Using a design that considered task variation and permitted inferential statistical tests, Mellow and Stanley (2002) replicated and extended Bardovi-Harlig's findings, investigating development of past time expression during a 4-month period on four parallel written free narrative tasks for six adult learners whose L1s were Chinese, Greek, Korean, Spanish, and Vietnamese. The texts produced by these learners were categorized into two groups: post-threshold texts comprised of 11 texts with greater than 70% simple past *suppliance in obligatory contexts* (SOC) and pre-threshold texts comprised of 10 texts with less than 70% simple past SOC. Mellow and Stanley (2002) also investigated the nature of ESL use on two different written tasks (for five learners of varying L1s), comparing the free narratives to narrative retellings of a silent film.

Five Patterns in the SLA of Past Time Sign Networks

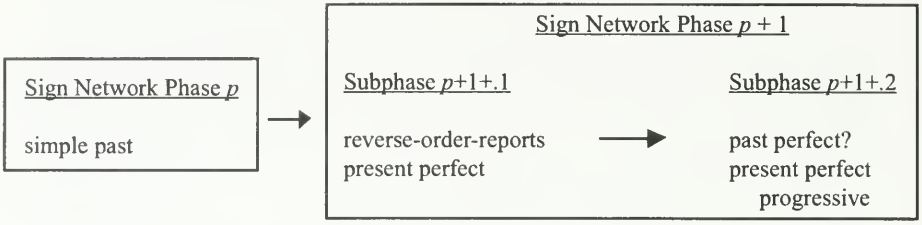
These longitudinal studies yielded five patterns that can be accounted for within the SCEC Framework. The first pattern was a consistent acquisition order in which relatively more complex past time sign networks (past perfect, present perfect, reverse-order reports) did not appear in a learner's production data until the simple past exhibited high levels of native-like suppliance.[2] Specifically,

Bardovi-Harlig (1994, p. 265) reported that when the learners first produced the past perfect (referred to by Bardovi-Harlig as the pluperfect), their appropriate use of the simple past ranged from 78% to 100% and averaged 87%. When these learners first produced the present perfect, their appropriate use of the simple past ranged from 68% to 93% and averaged 86% (Bardovi-Harlig, 1997, p. 390). When these learners first produced reverse-order-reports, their appropriate use of the simple past ranged from 37% to 100%, but averaged 85% (Bardovi-Harlig, 1994, p. 265). Bardovi-Harlig (1994, pp. 264, 273; 1997, pp. 377, 412, 414) interpreted the data to indicate that the use of the simple past needs to be stabilized or that certain acquisitional prerequisites must be attained before the more complex mappings can appear. The data reported in Mellow and Stanley (2002) supported these findings. In that study, the post-threshold texts exhibited significantly more contexts for past perfect and present perfect than did the pre-threshold texts.[3] Although these studies reported similar results, the coding and analyses were somewhat different. Bardovi-Harlig (1997, pp. 390, 397-8; 2000, pp. 141-2, 160, 167) reported the first use or production of past perfect and present perfect forms (potentially including overgeneralizations and ill-formed structures) in comparison to the rate of appropriate simple past use (potentially including ill-formed structures, but excluding overgeneralizations). In contrast, Mellow and Stanley (2002) reported the numbers of past perfect and present perfect contexts, whether or not the correct forms were used, in comparison to the rate of native-like suppliance of simple past in obligatory contexts.

The second pattern was a (slightly less consistent) acquisition order in which certain complex past time sign networks (past perfect, present perfect progressive) did not appear in a learner's production data until other complex past time sign networks (present perfect, reverse-order reports) had already appeared. Specifically, Bardovi-Harlig (1994, p. 264; 1997, p. 417) found that past perfect was first produced at the same time as or after reverse-order-reports and present perfect were first produced. Past perfect was also found to appear relatively late in Klein (1995, pp. 47, 50). In contrast, Mellow and Stanley (2002) found that past perfect appeared at least as early as present perfect. Finally, Bardovi-Harlig (1997, p. 390) found that the present perfect progressive appeared only after the present perfect had appeared.[4] Because the appearance of these latter developing sign networks followed only after the prior initial *appearance* of other sign networks (not after the prior exhibition of high levels of suppliance) and because there may be some variation in these orderings, these results suggest that these orders are of a different kind than that found between simple past and the more complex past time sign networks.

Building upon the representations of acquisition orders proposed in Krashen (1977), Dulay, Burt, and Krashen (1982), Pienemann and Johnston (1987), and Giacalone Ramat (1992), these two types of acquisition orders are represented in Figure 2. To distinguish and specify the two different types of developmental prerequisites (high levels of suppliance vs. initial appearance), Figure 2 illustrates our

Figure 2



Summary of the attested acquisition orders across past time sign networks.

proposal that there are two types of groupings of sign networks that develop at similar times, *phases* and *subphases*. A phase includes a set of interrelated sign networks that do not appear in production until after the sign network(s) within the previous phase have achieved a high strength of cognitive representation, as indicated by a high level of suppliance. In contrast, a subphase includes a set of interrelated sign networks that may not appear until after the sign network(s) in the previous subphase (if a previous subphase exists within that phase) have appeared in the interlanguage system, as indicated by initial appearance in production. An additional difference is that the orderings between phases appear to be quite certain, but the orderings between the subphases may be less certain or even subject to variation. These two categories of results are represented in Figure 2, with simple past in Phase *p*, with reverse-order-reports and present perfect in Subphase *p*+1+.1 and with past perfect and present perfect progressive in Subphase *p*+1+.2. Because of the contradictory findings noted above, a question mark indicates the uncertainty of the placement of the past perfect in Subphase *p*+1+.2.

The third pattern was a developmental pattern in which all overgeneralizations of simple past forms were significantly more frequent when the sign network exhibited a high level of suppliance, greater than 70% SOC (Mellow & Stanley, 2002). These overgeneralizations were to obligatory contexts for present perfect and for past perfect, as well as to contexts for non-past time signs, including infinitives and after modal verbs.

The fourth pattern was that there appeared to be distinctive patterns in the overgeneralizations that occurred with the newly developing, more complex sign networks. Specifically, when present perfect forms were overgeneralized in Bardovi-Harlig's (1997, pp. 400-402) data (N = 65), 63.1 % of the overgeneralizations were to contexts for simple past (a similar finding was reported by Klein, 1995, p. 47), 23.1% were to contexts for past perfect (or pluperfect), and 10.8% were to contexts for the present tense. In addition, when other forms were overgeneralized to contexts for the present perfect (N = 35), 43% were present tense forms, 37% were simple past forms, and 20% were past perfect forms.

In the data reported in Mellow and Stanley (2002), these patterns of overgeneralization were confirmed and expanded to overgeneralizations related to past perfect. Of the eight uses of or contexts for present perfect, two were present

perfect forms overgeneralized to simple past contexts and two were simple past forms overgeneralized to present perfect contexts. Of the 17 uses of or contexts for past perfect, one (6%) was a past perfect form overgeneralized to a simple past context and eight (44%) were simple past forms overgeneralized to past perfect contexts. These results reveal that a large number of the early uses of present perfect and past perfect involve overgeneralizations from or to simple past, indicating an interaction between the developmentally ordered sign networks that have been placed in phases *p* and *p*+1.

The fifth pattern was one of task variation in which the SOC of simple past was significantly higher in free narratives than in narrative retellings (Mellow & Stanley, 2002). On the free narrative task, the mean simple past SOC score was 95%. In contrast, the mean simple past SOC score was 72% on the narrative recall task.

An Integrated Interpretation of These Five Patterns

An integration of these results suggests the construct of a *developmental shift* that occurs once the simple past achieves a high strength of cognitive representation. This developmental shift of the simple past (Phase *p*) is characterized by the co-occurrence of high SOC scores, a significant increase in all types of overgeneralization of simple past forms, and the appearance of more complex past time sign networks, including present perfect, past perfect, and reverse-order-reports (Phase *p*+1). Because one of the co-occurring patterns is high SOC scores, our interpretation of these data is that the strength of cognitive representation of the simple past must reach a *threshold level* before the shift occurs and these patterns appear. Although the high strength of cognitive representation is inferred from high SOC scores, the level of suppliance of the simple past does appear to vary according to the type of elicitation task. As a result, the influence of task variation will need to be accounted for within the specification of the construct of a threshold level. The results also reveal that a large number of the early uses of present perfect and past perfect involve overgeneralizations from or to simple past. These patterns of overgeneralization led Bardovi-Harlig (1997, pp. 399, 415) to conclude that these past time expressions are fundamentally interrelated in their development, with learners gradually acquiring and distinguishing these related forms and meanings.[5]

ADDITIONAL CONSTRUCTS AND FINDINGS CONSISTENT WITH THE COMPETITION MODEL

In order to account for these five patterns and extend the scope of the Competition Model, this paper introduces additional SLA constructs and findings that are consistent with the Competition Model. To maintain theoretical coherence, the four primary theoretical commitments of the Competition Model (connectionism, form-function mappings, capacity limitations, and input-driven

learning) are retained. Combining the assumptions of the Competition Model with additional SLA constructs permits the integration of two well-known concepts in acquisition research into the framework. The first concept is Brown's (1973, p. 186) notion of cumulative complexity: Within certain coherent acquisition orders, later developing elements are composed of earlier developing elements. In other words, a sign network composed of '$x + y$' is more complex than either x or y alone and should be acquired only after x and y have been acquired. This notion corresponds to the acquisition orders illustrated in Figure 2 and is discussed in the section below on explanatory factors for developmental patterns. The second concept is the Competition Model's notion of competition, in production, of forms for expressing functions (i.e., functions are mapped onto either native-like or non-native-like forms). This notion corresponds to the types of overgeneralizations reported as the fourth finding and is discussed in the sections below on the longitudinal development of individual sign networks and on the interrelationships between sign networks. Before discussing how these concepts can be integrated into the framework, the next section provides an account of task variation and its effect on interlanguage use. To achieve definitional adequacy, these new constructs are presented in a specific, falsifiable manner that permits a precise instantiation of past time findings.

Capacity Limitations and Task Variation

The past time findings suggest that SOC is affected by task properties (the fifth finding reported above). This variation affects the accurate quantification and operationalization of hypothesized threshold values for developmental shifts. Consequently, the SCEC Framework specifies aspects of processing capacity limitations that are consistent with those specified in the Competition Model. In considering production data, the SCEC Framework characterizes certain types of task variation as due to capacity limitations (or limited attentional resources) and the strength of network connectivity (or degree of automatization).

In previous SLA studies, certain aspects of the systematically variable nature of L2 use have been attributed to the different cognitive demands of the tasks in which language data are elicited. In particular, researchers have reported that the SOC or Target-like Use[6] of grammatical forms is higher on tasks in which greater amounts of attention may be focused on the production of those sign networks (R. Ellis, 1987, 1994; Hulstijn, 1989; Hulstijn & Hulstijn, 1984; Mellow, 1996; Salaberry & Lopez-Ortega, 1998). In addition, Mellow and Cumming (1994), in a study of the ESL use of plural morphology, found that tasks such as writing, in which learners have relatively abundant attentional resources available for focusing on signs, result in different interlanguage production patterns than those exhibited on other tasks in which learners have relatively limited attentional resources, such as spoken tasks involving attention to content (cf. VanPatten, 1995). Mellow (1996), a study of ESL article use, further argued that production patterns on different tasks are affected by both the availability of attentional resources and the

degree to which sign networks are automatized (cf. McLaughlin & Heredia, 1996; Segalowitz & Lightbown, 1999). These results are consistent with the result in Mellow and Stanley (2002), reported above, in which simple past forms were supplied in a significantly more native-like manner in written free narratives than in written narrative retellings.

Although these previous accounts of task variation utilize the constructs of an information-processing perspective on cognition (e.g., Hulstijn, 1989; McLaughlin & Heredia, 1996), these findings may also be interpreted within a connectionist perspective. Specifically, limited attentional resources may be considered to be one type of capacity limitation, and although connectionist models may lack explicit attentional mechanisms, Rumelhart and McClelland (1986b, pp. 114-118) argued that connectionist models are capable of exhibiting attentional phenomena (see also Shirai, 1992, pp. 107-108). In addition, degree of automatization may be considered a reflection of strength of connectivity or the utilization of "a relatively permanent set of associative connections in long-term storage" (McLaughlin & Heredia, 1996, p. 214). Thus, strength of cognitive representation or connectivity may be very similar to the construct of automatization.

Building upon the Competition Model's assumption of capacity limitations, upon these previous studies of interlanguage variability, and upon the past time findings of Mellow and Stanley (2002), the Principle of Task Variation below accounts for the effects of the availability of attentional resources during the performance of a task.

Principle of Task Variation:
L2 learners will exhibit greater suppliance of a form in its obligatory functional contexts when the learners are able to (i) use signs in contexts or for meanings that are strongly and consistently represented in interlanguage networks, and (ii) use those signs when large amounts of limited attentional capacities need not be focused on other aspects of communication.

The principle proposes that sign networks will have higher SOC scores in language tasks that allow learners to use those signs in specific contexts or for specific meanings that, for the learner, are often used and have a high strength of connectivity (or are relatively automatized) (Barlow, 1996; Bruner, 1983; Sinclair, 1991). In addition, the principle proposes that forms will be supplied more often in language tasks when learners do not need to allocate large amounts of their limited attentional capacity to other aspects of communicating the intended meaning, especially recalling, organizing, and formulating new and complex content (Mellow & Cumming, 1994; Shirai, 1992, p. 110). Thus, tasks with a choice of content and/or text structure, compared to tasks with less or no choice, are likely to result in interlanguage use in which forms are supplied more often in obligatory functional contexts (see also Selinker, 1972).

It is important to point out that variations in the strength of connectivity between native-like forms and functions are hypothesized to be manifested in two

types of language patterns: (i) variation in SOC scores (discussed further in the section below on longitudinal development), and (ii) task variation (see also MacWhinney, 1997, esp. pp. 133-135). First, if native-like connections are not strong, then production will exhibit a low SOC. From the perspective of the Competition Model, the interlanguage system may have non-native-like cue validity for a sign network because there is competition between native-like and non-native-like forms for expressing functions. A cue that is obligatory for native speakers may not consistently be available for a learner's production. Second, if native-like connections are not strong enough to be automatic, then tasks that allow or encourage more attention to particular signs will have higher SOC scores than tasks that allow or encourage less attention to those signs.

Explanatory Factors for Developmental Patterns

As noted in the overview above, the Competition Model assumes that developmental patterns result from the frequency in input and functional properties of the mappings being learned (i.e., cue validity). In order to account for the past time production data, the SCEC Framework includes additional connectionist, environmentalist, and compositionist explanatory factors that are consistent with the Competition Model. With respect to a connectionist explanation, the SCEC Framework assumes that the types of learning curves exhibited in the past time findings result from associative learning processes (as discussed in the following two sections).

Frequency in input, an environmentalist factor, is likely to have contributed to the orders of acquisition across phases summarized in Figure 2, in which simple past develops before present perfect and past perfect. In their analysis of a 20-million word corpus of authentic English use, Biber et al. (1999, pp. 456-461) reported that simple past occurred 5 to 20 times more frequently than present perfect, depending upon register. In addition, simple past occurred 10 to 70 times more frequently than past perfect, depending upon register (Biber et al., 1999, pp. 456-461).

The past time findings are also consistent with the formal and functional properties that comprise the linguistic sign networks being learned. As developed in Mellow and Stanley (2001), this compositionist explanation includes the constructs of *aggregate processability* and *cumulative ordering*. Aggregate processability is the hypothesis that acquisition orders across sign networks occur because the aggregation of specific formal and functional properties makes certain signs relatively more difficult to process in comprehension or production. Because connectionist models propose that development results from the network associations that occur during the processing of masses of exemplars, signs that are easier to process will presumably be processed more often and hence learned earlier. In brief, the aggregation of formal and functional properties impedes processing and hence delays acquisition.

The formal properties that make signs difficult to process include, but are

not limited to: (i) low perceptual salience; and (ii) complex structural properties, including quantity of required phonological (especially phonotactic), morphological, and/or syntactic forms (e.g., Brown, 1973; Givón, 1984). The functional properties that make signs difficult to process include, but are not limited to: (i) low functional load, including frequent or absolute discourse or syntagmatic redundancy (Mellow, 1996; Mellow & Cumming, 1994; VanPatten, 1995); and (ii) complex functional load, including abstract, non-prototypical, or less relevant semantic content (e.g., Andersen & Shirai, 1994; Plunkett, Sinha, Moller, & Strandsby, 1992).

Building upon Brown's (1973) "law of cumulative complexity" (cf. O'Grady, 1987, pp. 195-198; Radford, 1990, pp. 268-270), cumulative ordering is the hypothesis that acquisitional orders result when it is necessary for certain linguistic forms or functions to have already appeared or achieved stability before a sign network that includes or builds upon that form or function can appear. In this way, sign networks that are interrelated and dependent upon each other are expected to be sequentially related within the acquisition order. Cumulative ordering does not make predictions about the acquisition order of elements that are not in a cumulative complexity relationship to each other.[7] These two hypotheses have been combined into the The Compositionist Principle of Acquisition Orders.

> **The Compositionist Principle of Acquisition Orders:**
> Sign networks will develop in a specific order according to the properties of which they are composed, including: (i) the aggregate processability of their formal and functional components; and (ii) the cumulative ordering that results from the developmental interrelations of the forms and functions within each sign network.

The compositionist explanation is consistent with the orders of past time acquisition (the first and second findings summarized in Figure 2 and reported in the section on five patterns in the SLA of past time sign networks). One order of acquisition across phases, simple past developing before present perfect, is likely to have been affected by formal and functional processability properties and by cumulative ordering. With respect to the processability property of structural complexity, simple past is expressed by an inflected verb, but the present perfect is more complex because it requires both an inflected auxiliary verb and an inflected participle. In addition, the low perceptual saliency of the auxiliaries *have* and *has*, when contracted,would also make the present perfect more difficult to process (Brown, 1973, pp. 375-376, 409-410). With respect to complexity of functional load, the simple past may express the semantic feature *anterior*, whereas the present perfect may express two features, *anterior* and *current relevance*. Thus, with respect to processability properties, present perfect is more difficult to process and therefore this may partially account for its later acquisition.

With respect to cumulative ordering, these same functional properties (i.e., anterior only vs. both anterior and current relevance) may also rank the simple past before the present perfect. The structural properties are less clear, but the inflected

simple past form is often identical to the past participle in the present perfect, suggesting a cumulative ordering in which the inflected verb form must be acquired before the structurally more complex present perfect can appear.

An additional order of acquisition across phases, simple past developing before past perfect, can also be accounted for by the same properties of processability (structural complexity, perceptual salience, and semantic complexity) and by a similar cumulative ordering. Simple past is expressed by an inflected verb, but past perfect is more complex because it requires both an inflected participle and an inflected auxiliary verb that may be contracted. With respect to semantic complexity, the simple past may express the semantic feature *anterior*, whereas the past perfect may express both *anterior* and *prior to point of reference*. In sum, these sign networks indicate how compositionist factors may contribute to acquisition orders.

The Longitudinal Development of Individual Sign Networks: Stages

The SCEC Framework includes constructs that account for the development of sign networks longitudinally, in four stages from emergence through to mastery. This longitudinal development is included in the Framework because the past time findings suggested: (i) that there is a link between the first appearance of some sign networks (e.g., present perfect, past perfect) and the mastery of other sign networks (e.g., simple past) as in the first finding reported above; and (ii) that the early development of a sign network may be characterized by certain types of overgeneralizations, whereas the later development of a sign network may exhibit different types of overgeneralizations (the fourth finding reported above).

Following the seminal longitudinal acquisition research of Cazden (1968), the SCEC Framework includes stages within the acquisition of a single sign network, specifying changes in the amount and type of overgeneralizations. In analyzing the L1 acquisition of plural inflections by three children (Adam, Eve, and Sarah), Cazden divided longitudinal development into four periods: Period A, the absence of the inflection; Period B, occasional production with neither errors nor overgeneralizations; Period C, marked increases in production, with errors and overgeneralizations; and Period D, attainment of the arbitrary criterion of 90 per cent correct use.

By following Cazden's analysis of L1 acquisition and incorporating the full longitudinal development of a sign network into the SCEC Framework, the Framework includes three different perspectives regarding the nature of SLA (Huebner, 1979; Larsen-Freeman & Long, 1991, pp. 40-41). The first perspective is a *beginning-point* or *emergence* perspective. Within this approach, acquisition is determined according to the order in which specific language elements first emerge in production (e.g., the first systematic use of a syntactic structure: Meisel, Clahsen, & Pienemann, 1981; Pienemann & Johnston, 1987). The second perspective is a *middle, multi-staged*, or *evolutionary* perspective (N. Ellis & Schmidt, 1997, 1998; Long & Sato, 1984; Mellow, Reeder, & Forster, 1996). Within this perspective,

the intermediate developmental stages of specific linguistic subsystems are considered, including overgeneralizations and developmental shifts. The third perspective is an *end-point* or *mastery* perspective. Within this approach, acquisition is determined according to the order in which the production of specific language elements (e.g., morphemes) achieve a mastery level, such as the achievement of a criterion level (e.g., 90%) of SOC or of Target-like Use (e.g., Cazden, 1968; Hakuta, 1976; Master, 1987; Pica, 1983; Schumann, 1976).

Although these three different perspectives have been motivated by different purposes and have involved different definitions of what it means to acquire a language element, we believe the integration of these perspectives into the Framework is important because it can significantly contribute to a theory of longitudinal SLA. As illustrated later in the instantiation of the SCEC Framework, the first perspective corresponds to Stage 1 (Emergence) in the development of a sign network, the second perspective corresponds to Stages 2 and 3, and the third perspective corresponds to Stage 4 (Near native-like).

The distinction between Stages 2 and 3 is motivated by the three co-occurring patterns in the past time data: (i) high levels of suppliance of simple past; (ii) the appearance of the more complex past time sign networks, and (iii) a significant increase in overgeneralizations of simple past (the first and third findings reported above). In other words, at about 70% SOC there was a developmental shift involving multiple co-occurring changes in the sign networks. Because this shift occurs only after high SOC scores are achieved, the SCEC Framework includes the construct of a threshold level of cognitive representation (i.e., strength or consistency of network connectivity; cf. Plunkett et al., 1992, esp. p. 307; Elman et al., 1998, pp. 128-129).

Prior to the threshold, Stage 2 involves gradual development: incremental increases in SOC. Connectionist learning processes (i.e., the strengthening of patterns of connectivity) have been shown to provide a very plausible account of slow, gradual, and cumulative development (e.g., N. Ellis, 1998, 1999; N. Ellis and Schmidt, 1997, 1998; Elman et al. 1998; MacWhinney, 1997, esp. p. 129; Rumelhart & McClelland, 1986a; Schmidt, 1994). After the achievement of the threshold, Stage 3 involves the expansion of a sign network so that it becomes linked to related and more complex forms and functions. Connectionist models are able to account for these patterns because associative learning exhibits both shifts and network expansions (e.g., N. Ellis, 1998; N. Ellis & Schmidt, 1997, 1998; Elman et al., 1998, esp. pp. 124-129, 173-238; Plunkett et al., 1992). Because not all sign networks will be in a cumulative complexity relationship with each other, a precise framework for understanding development will need to specify a set of developmental relationships. These relationships are addressed by the constructs of phases and subphases, illustrated in Figure 2, as well as by the notion of cumulative ordering, which is explained in the previous section. As a result of the past time findings, the threshold level that defines the boundary between Stages 2 and 3 has been tentatively set at 70% SOC. However, further investigation is

required to assess and validate the nature of a threshold, including the influence of the different task conditions in which language is used (see the Principle of Task Variation above).

Interrelationships Between Sign Networks: Overgeneralizations

Building from the Competition Model's notion of the competition of native-like and non-native-like forms for expressing meaning in production tasks, the SCEC Framework provides an account of the nature of the past time overgeneralizations. The Framework specifies different types and subparts of overgeneralizations as interrelationships between established and emerging sign networks, and accounts for them with changes in network connectivity. The nature of overgeneralization is included in the SCEC Framework because the past time findings indicated: (i) that the early uses of a sign network may be characterized by certain types of overgeneralizations, whereas later development may exhibit different types of overgeneralizations (the fourth finding reported above); (ii) that overgeneralizations of simple past forms increased significantly after the simple past exhibited a high level of suppliance (the third finding reported above); and (iii) that overgeneralizations can be changes in the production of one sign network that are associated with changes in and the appearance of another sign network.

Whereas Cazden (1968) subsumed all overgeneralizations into one period (Period C) within the development of an individual language element, the past time data suggest that there are two different types of overgeneralizations that correspond to different stages within the development of a sign network. In addition, the different types of overgeneralizations can also be characterized in reference to the phase of the sign network context to which the form is overgeneralized. Specifically, in Stage 2 the predominant inter-phasal overgeneralizations are of an emerging form (one that has low SOC scores) to the functional contexts for a previously established sign network (i.e., to the preceding phase). In Stage 3, the predominant inter-phasal overgeneralizations are of an established form (with high SOC scores) to the functional contexts for an emerging sign network (i.e., to the next phase). In addition to these two types of overgeneralization, the data and the representation in Figure 2 suggest four additional types. The third type is overgeneralizations to and from sign networks within the same phase, that is, intra-phasal overgeneralizations. The fourth type is overgeneralizations to or from sign networks that are in phases that are more than one phase apart in the acquisition order. The fifth type is overgeneralizations not involved in the order of interrelated sign networks (e.g., past time marking on an infinitival verb, as in *to came*). The sixth type is overgeneralizations within an individual sign network (e.g., suffixation used in place of internal change).

In addition to distinctions between these six types of overgeneralizations, previous studies have indicated that overgeneralization may be comprised of two developmental subparts: increases in overgeneralizations, followed by reductions in overgeneralizations. In a seminal longitudinal case study of one learner's ESL acquisition of the form-function mapping for the article *the* (phonetically realized

as [da]), Huebner (1983a; see also 1979, 1983b) described these two subparts of overgeneralization as *flooding* and *trickling*. Importantly, Huebner (1983b, p. 146) found that flooding and trickling were not random, but developed through a series of short periods in which the form was flooded to and trickled from specific functional contexts that could be defined in terms of semantic features. In addition, the linguistic contexts involved in flooding were not necessarily the same (in the reverse order) of those involved in trickling, further indicating the importance of a distinction between these two subparts of overgeneralization. Similarly, Barrett (1986), in a longitudinal case-study of one learner's L1 acquisition of early-acquired word meanings, found that word meaning developed through specific periods of overextension and rescission of overextension.[8] The SCEC Framework incorporates these two subparts of overgeneralization, labeling them as increases in overgeneralization and retreat of overgeneralization. These two subparts of overgeneralization correspond to two substages in the development of a sign network, resulting in subdivisions within Stages 2, 3, and 4.[9]

In three ways, these overgeneralizations are effectively accounted for by using the Competition Model and connectionism. First, the use of associative learning processes is effective because connectionist simulations since Rumelhart and McClelland (1986a) have consistently demonstrated that overgeneralizations and U-shaped learning curves are a natural consequence of associative learning processes (N. Ellis, 1998; N. Ellis & Schmidt, 1997; Elman et al., 1998; Gasser, 1990; Plunkett et al., 1992).

Second, using sign-based and connectionist perspectives, overgeneralizations are interpreted as changes in the interconnections within a learner's interlanguage network. As a result of associative learning that occurs during the processing of exemplars, learners develop patterns of connectivity between multiple forms and multiple functions. From the perspective of the target language, these interconnections may increase or expand in such a way that the forms and functions of one sign network become connected to the forms and functions of another sign network(s). Overgeneralizations then result when these "overlapping" sign networks are activated (or when a non-native-like form prevails in the competition for expressing a function). In this way, behavior that might have been attributed to an overgeneralized rule is not rule-governed, but instead results from specific patterns of activation or weightings of connections between forms and functions.

Third, this connectionist account is consistent with an environmentalist explanation of overgeneralizations and their retreat. While using language within many diverse and demanding contexts, learners are constantly attempting to comprehend complex input and to express complex meanings (see also the functionalist explanation of development: Mitchell & Myles, 1998, pp. 100, 119). During the beginning stages of development, learners are only able to process relatively simple forms and functions. However, as the patterns of connection for these simple sign networks become strong and less variable (and achieve a threshold strength of connectivity), learners are presumably able to begin processing mean-

ings and structures that are increasingly and cumulatively complex. Therefore, overgeneralization patterns occur and increase as learners' interlanguage networks expand and begin to regularly include related, more complex forms and functions.

In addition, continued associative learning can account for retreat of overgeneralization patterns. If new forms and functions are connected to and built upon the more established sign networks, then the initial patterns of connectivity will be characterized by variability that is manifested in competition and overlapping sign networks. However, as the processing of large numbers of diverse target exemplars continues (Barlow, 1996), the connection strengths between these elements can be modified so that there will be very little or no connectivity between non-native-like forms and functions. In other words, the change in connection strength will appear as a reduction in the overlapping sign networks and therefore as a retreat of overgeneralization patterns.

Although the SCEC Framework provides a description of these developmental patterns in relation to sign networks, it does not specify the mechanism underlying these shifts. In addition, the Framework does not address technical problems in the neural network modeling of these patterns. A number of these issues and difficulties are discussed by MacWhinney (2000, in press).

AN INSTANTIATION OF THE SCEC FRAMEWORK

To improve definitional adequacy, the new constructs of the SCEC Framework have been presented in a specific, falsifiable manner. This specificity permits a precise instantiation of the constructs in relation to the five SLA past time findings presented earlier. The instantiation involves the following constructs:

(1) phases that characterize a subset of acquisition orders across sign networks;
(2) subphases that characterize an additional subset of acquisition orders across sign networks;
(3) a Compositionist Principle of Acquisition Orders that accounts for the placement of sign networks in phases (or subphases);
(4) four stages that characterize the developmental sequence within a specific sign network: Emergence, Pre-threshold, Post-threshold, and Near native-like;
(5) two substages that allow for the two subparts of overgeneralization (increases in overgeneralization and retreat of overgeneralization) within the Pre-threshold, Post-threshold, and Near native-like stages;
(6) a Principle of Task Variation that accounts for certain aspects of variability in the suppliance of a form in its obligatory contexts;
(7) an important threshold boundary between the second and third stages of development of a sign network, with the actual threshold SOC value varying according to the attentional requirements of a task, among other possible factors;

(8) a post-threshold stage that occurs after a developmental shift and is characterized by a significant increase in overgeneralizations (especially the second and fifth types specified in the section above on interrelationships between sign networks);
(9) a post-threshold stage that occurs after a developmental shift and is characterized by its co-occurrence with the appearance of sign networks in the subsequent phase; and
(10) a specification of the domains of overgeneralization at each stage, with several important domains of overgeneralization linked to the Compositionist Principle of Acquisition Orders.

These precise developmental relations are illustrated in Figure 3 with respect to the development of two sign networks, simple past and present perfect. In Figure 3, increases in overgeneralization are abbreviated as ↑OvG and the retreat of overgeneralization is abbreviated as ↓OvG.

In addition, the domain of the overgeneralization is specified and abbreviated in parentheses, with the first variable indicating the phase of the form that is overgeneralized and the second variable indicating the phase of the context to which the form is generalized. For example, ↑OvG ($p \rightarrow p+1$) describes increases in overgeneralizations of a form from a sign network in phase p to the context for a sign network in phase $p+1$.

The horizontal dimension in Figure 3 indicates increases in interlanguage complexity. More specifically, the horizontal axis indicates an acquisition order of phases across sign networks, with a subset of possible past time sign networks indicated as phase p, which includes simple past, and phase $p+1$, which includes present perfect. Due to space limitations, Figure 3 represents only a subset of the English sign networks that express past time. The figure includes only two past time sign networks and does not indicate subphases. In addition, Figure 3 illustrates only a subset of the possible types of overgeneralization.

Stages Within the Developmental Sequence of an Individual Sign Network

Vertically, Figure 3 represents development within each sign network, with each going through four stages and with important substages within three of those stages. Stage 1, Emergence, exhibits the beginnings of the regular, systematic use of the sign network, in contrast to very occasional use. Because of the difficulties involved in distinguishing between systematic and formulaic use, our use of the term *emergence* does not specify that use is non-formulaic (cf. Meisel, Clahsen, & Pienemann, 1981). As indicated in Figure 3, the appearance of present perfect in phase $p+1$ begins only after the simple past sign network in the previous phase has achieved a threshold.

Stage 2, Pre-threshold, may be a relatively long stage in real time and is characterized by the dominance of an interlanguage pattern that Stanley (1998) described as *underapplication*, the absence of inflectional forms (suffixation, in-

Figure 3

<table>
<tr><td colspan="3">Phase p</td><td colspan="3">Phrase p + 1</td></tr>
<tr><td colspan="3">simple past</td><td colspan="3">present perfect</td></tr>
<tr><td colspan="3">Stage 1 - Emergence</td><td colspan="3" rowspan="2"></td></tr>
<tr><td colspan="3">Stage 2 - Pre-threshold (<70% SOC): Underapplication
(substages not indicated)
Increases in SOC
↓</td></tr>
<tr><td colspan="3">Stage 3 - Post-threshold (>70% SOC)</td><td colspan="3">Stage 1 - Emergence</td></tr>
<tr><td colspan="3"></td><td colspan="3">Stage 2 - Pre-threshold (<70% SOC): Underapplication</td></tr>
<tr><td rowspan="2">Increases in SOC
↓</td><td>Substage 3.1 - Increases in OvG to a SN in the next phase;
↑ OvG ($p \rightarrow p_{+1}$)</td><td>Substage 3.1 - Increases in OvG from a SN in the next phase;
↑ OvG ($p_{+1} \rightarrow p$)</td><td rowspan="2">Increases in SOC
↓</td><td>Substage 2.1 - Increases in OvG from a SN in the previous phase;
↑ OvG ($p \rightarrow p_{+1}$)</td><td>Substage 2.1 - Increases in OvG to a SN in the previous phase;
↑ OvG ($p_{+1} \rightarrow p$)</td></tr>
<tr><td>Substage 3.2 - Retreat of OvG to a SN in the next phase;
↓OvG ($p \rightarrow p_{+1}$)</td><td>Substage 3.2 - Retreat of OvG from a SN in the next phase;
↓OvG ($p_{+1} \rightarrow p$)</td><td>Substage 2.2 - Retreat of OvG from a SN in the previous phase;
↓OvG ($p \rightarrow p_{+1}$)</td><td>Substage 2.2 - Retreat of OvG to a SN in the previous phase;
↓OvG ($p_{+1} \rightarrow p$)</td></tr>
<tr><td colspan="3">Stage 4 - Near native-like (>95% SOC) (substages not indicated)</td><td colspan="3">Stage 3 - Post-threshold (>70% SOC) (substages not indicated)
Increases in SOC
↓</td></tr>
<tr><td colspan="3"></td><td colspan="3">Stage 4 - Near native-like (>95% SOC) (substages not indicated)</td></tr>
</table>

Instantiation of the SCEC Framework, specifying stages, substages, and phases of second language acquisition of past time sign networks (SN), including increases (↑) and decreases (↓) in overgeneralizations (OvGs) between SNs in adjacent phases. SOC = suppliance in obligatory contexts; parentheses contain: (phase of overgeneralized form → phase of context to which form is generalized).

ternal change, or suppletion) or the use of non-native-like forms in obligatory contexts. This stage begins at just above 0% SOC and continues, with gradual increases due to associative learning, until a learner reaches the threshold, which has been operationalized at 70% SOC. During this stage, learners presumably develop and expand upon the prototypical meanings of the sign networks (e.g., Andersen & Shirai, 1994; Barlow, 1996; Barrett, 1986; Plunkett et al., 1992). In addition, the sign networks also expand to consistently include allomorphs (e.g., [t], [d], and [əd]) and other morphological means of expressing these functions (e.g., internal change and suppletion).

During Stage 2, as associative learning continues, additional interlanguage patterns appear. To characterize these developmental patterns, Stage 2 has been divided into two substages, with Substage 2.1 including increases in overgeneralization and Substage 2.2 including retreat of overgeneralization (because of space limitations and in order to represent the five patterns of past time findings reported above, these substages are specified in Figure 3 only for the present perfect). The domains of overgeneralization have been specified, emphasizing those domains of overgeneralization that are linked to phases p and p+1 and to the Compositionist Principle of Acquisition Orders. Substage 2.1 includes two concurrent patterns of increases in overgeneralization (or flooding): overgeneralizations of forms from the previous phase (e.g., simple past *-ed* overgeneralized to present perfect contexts; $\uparrow$OvG ($p \rightarrow p+1$)), and overgeneralization of the new form to the sign network in the previous phase (e.g., present perfect *have Verb+ed* overgeneralized to simple past contexts; $\uparrow$OvG ($p+1 \rightarrow p$)). Although these overgeneralization patterns have been ordered concurrently, it may be that the overgeneralization of old forms to new contexts may slightly precede, and then overlap with, the overgeneralization of new forms to old contexts (Klein, 1995).

In Substage 2.2, the later part of Stage 2 when SOC values are relatively higher, the figure indicates that the previous overgeneralizations diminish. This substage includes two concurrent patterns of the retreat of overgeneralization (or trickling): The retreat of overgeneralizations of forms from the previous phase ($\downarrow$OvG ($p \rightarrow p+1$)), and the retreat of overgeneralizations of the new form to the sign network at the previous phase ($\downarrow$OvG ($p+1 \rightarrow p$)).

Stage 3, Post-threshold, is the stage immediately after learners exhibit a developmental shift in their interlanguage production. The threshold level of strength of cognitive representation is manifested in a high level of suppliance in obligatory contexts, with underapplication no longer being a dominant production pattern. This strength of representation is also manifested in two other production patterns: (i) a significant increase in overgeneralizations, and (ii) the appearance of sign network(s) in the subsequent phase, exhibiting the beginnings of regular, systematic use. This stage begins at 70% SOC and continues until a learner reaches a near-native-like level, which is tentatively operationalized at 95% SOC.

Because of the significance of overgeneralizations during this stage, Stage 3 has been divided into two substages, with Substage 3.1 including increases in

overgeneralization and with Substage 3.2 including retreat of overgeneralization (these substages are specified in Figure 3 only for the simple past). The domains of overgeneralization have also been specified, emphasizing those domains of overgeneralization that are linked to phases *p* and *p*+1, and to the Compositionist Principle of Acquisition Orders. Substage 3.1 includes two concurrent patterns of increases in overgeneralization: overgeneralizations of forms to the next phase (e.g., simple past *-ed* overgeneralized to present perfect contexts; ↓OvG (*p*→*p*+1)), and overgeneralizations of a form from the next phase (e.g., present perfect *have V+ed* overgeneralized to simple past contexts; ↑OvG (*p*+1→*p*)). Because these overgeneralizations are exactly the same as those specified above for Stage 2 of the present perfect, the Framework captures the fact that the two sign networks are interrelated or overlapping, sharing this developmental substage.

Stage 4, Near Native-like, exhibits very high SOC (approaching 100%). This maximal value will vary according to a number of factors, including the possibilities (i) that some learners may stabilize or fossilize at a lower level (e.g., Selinker, 1972), and (ii) that a ceiling level of SOC might be somewhat lower, due to factors such as phonotactic constraints on suffix production in speech.[10] During this stage, there will be relatively few overgeneralizations, resulting in Target-like Use values very close to 100%. Other than the overgeneralization and retreat of overgeneralization of these forms to sign networks that appear and develop later or overgeneralizations from these later sign networks (↑OvG (*p*→*p*+2); ↑OvG (*p*+2→*p*); ↓OvG (*p*→*p*+2); ↓OvG (*p*+2→*p*)), in this stage learners have generally stabilized in their use of this sign network.

EVALUATION OF THE SCEC FRAMEWORK

The SCEC Framework can be evaluated in relation to the criteria outlined in the introduction: source of theoretical constructs, definitional adequacy, empirical support, and scope. While considering data that are beyond the previous scope of the Competition Model, the SCEC Framework has maintained theoretical coherence by retaining the four original theoretical commitments. The SCEC Framework has utilized clear and specific constructs and principles in order to provide an analysis of empirical findings regarding the development of past time expression. The SCEC Framework has achieved an important goal in theory development (Fantuzzi, 1993, p. 302; Seidenberg, 1993, p. 233) because it is able to integrate and account for a diverse set of previously unrelated empirical findings. The SCEC Framework involves the unification of aspects of three dominant issues in SLA research: (i) developmental sequences, including types of overgeneralization; (ii) acquisition orders; and (iii) task variation.

Further empirical support, in the form of replications, is necessary for these past time constructs. In addition, in order to more precisely describe developmental patterns, large sample sizes and relatively long longitudinal studies are required. To insure the reliability and comparability of these data, it will be valuable to

develop data elicitation procedures that vary task conditions and yet consistently elicit reasonable numbers of contexts of the specific sign networks being studied. The techniques of corpus linguistics (e.g., Barlow, 1996; Biber, 1988; Biber et al., 1998) and time-series analysis (e.g., Mellow, Reeder & Forster, 1996; Morgan, Bonamo & Travis, 1995) would be especially useful for analyzing these data sets.

The SCEC Framework would increase its definitional adequacy if its constructs were fully falsifiable. However, to a certain extent, a number of the axiomatic assumptions and interactions of the SCEC Framework may be difficult to test and falsify. For example, it would be difficult to falsify the assumptions that sign networks are optimal units of analysis and that the actual value of a threshold SOC is due to many possible task properties, including but not limited to the availability of attentional capacities. In addition, falsification of any single construct in the SCEC Framework may be difficult because unexpected empirical results may not be attributable to the unique contribution of just one construct, but rather may be related to the entire framework of assumptions. These limitations hold equally for aspects of many complex theories, including theories such as the Competition Model and Universal Grammar. Because of problems such as these, both Long (1993) and Schumann (1993) have critically discussed the limitations of falsifiability as a requirement on theories.

In spite of these limitations, many aspects of the SCEC Framework have been expressed using precise constructs that can be tested and, potentially, falsified. For example, empirical studies could reveal that present perfect is used consistently almost as early as simple past (see Klein, 1995, as discussed in endnote 3), raising a question about the value of the constructs of phase and threshold for these sign networks. In addition, studies could reveal that the threshold level for the initial appearance of the more complex sign networks is highly variable from learner to learner, perhaps occurring only around 25% SOC rather than around 70% SOC. This result would raise a question about the value of the construct of threshold and of the distinction between phases and subphases. As a final example, it might be found that overgeneralizations of simple past to unrelated sign networks (such as infinitives) increase significantly at a time that is different than the initial appearance of the more complex, related sign networks, raising a question about the value and coherence of a developmental shift due to network expansion.

The SCEC Framework also currently has a number of limitations with respect to the scope of its theoretical components, the scope of the linguistic elements that are considered, and the scope of the empirical support. With respect to the scope of the current theoretical components, the Framework, especially the Compositionist Principle of Acquisition Orders, does not explain why some orderings of sign networks are inter-phasal and others are intra-phasal. This reflects the general difficulty that compositionist explanations have had in accounting for acquisition orders (e.g., Fantuzzi, 1992, p. 335; O'Grady, 1987, pp. 198-199; Radford, 1990, pp. 263-268). In addition, it is very difficult to determine,

predict, or explain the impact of each potentially contributing factor (i.e., the relative contribution of frequency in input and of specific properties with respect to low perceptual salience, complex structural properties, low functional load, and complex functional load).

In addition, the SCEC Framework does not currently specify the interaction between first language influence and acquisition orders. At present, the Framework draws from many first language acquisition studies and could as easily be applied to the interpretation of L1 acquisition studies. However, a number of researchers have argued that connectionist models and the Competition Model can provide effective accounts of language transfer (Gasser, 1990, p. 189; MacWhinney, 1997; Shirai, 1992; Sokolik & Smith, 1992). In addition, researchers such as Zobl (1982), Rutherford (1989), Andersen (1990), Gass (1996), and Kroll and de Groot (1997) have provided important analyses that could be utilized in modeling the interaction of transfer, acquisition orders, and developmental sequences.

With respect to the scope of the linguistic elements that are considered, one limitation is that the sign networks proposed within the Framework are oversimplified because they do not include the full range of forms, functions, and linguistic features that are involved in these past time sign networks. In addition, the Framework does not currently consider other past time sign networks that may be involved in these developmental patterns. Furthermore, the number of English language elements that enter into a cumulative ordering relationship may not be extensive, potentially limiting the scope of these analyses (O'Grady, 1997, p. 350). With respect to morphological components of sign networks, it may be that agglutinating and polysynthetic languages exhibit relatively more examples of morphemes that enter into a cumulative ordering relationship. For additional sign networks that are inter-related, empirical evidence will be required to determine whether networks that are more cumulatively complex appear after less complex networks achieve a threshold level of cognitive representation.

The type of data used to support the Framework could also be expanded. The data upon which the SCEC Framework is based are primarily written monologues. Consequently, the empirical scope of the Framework could be increased by analyzing spoken data, interactional data, and data produced when learners are attending more to meaning than form. A final concern regarding scope is that the Framework has not yet been specified as a connectionist model and tested in a connectionist simulation. The Framework needs to be converted into the components of a simulation, specifying inputs, outputs, network architecture, and learning rules. If the performance of the network were to match the past time findings (or certain subsets of the complex patterns), that result would provide important support for the SCEC Framework. These simulations may be especially useful for investigating the impact of each potentially contributing factor.

CONCLUSION

This paper has proposed a detailed framework that incorporates a connectionist, incrementalist view of learning into SLA research. To achieve this, the SCEC Framework incorporates parallel empirical findings from acquisition studies and from connectionist simulations of language development. The SCEC Framework includes a number of theoretical principles and constructs, building from the Competition Model and from accounts of longitudinal acquisition. The SCEC Framework has the following important characteristics. First, the SCEC Framework accounts for these past time findings by integrating three important patterns that have been found in connectionist simulations of language development: (i) as a result of processing a large number of exemplars of the target elements, associative learning continually adjusts the network so that native-like behaviors are gradually achieved; (ii) associative learning can result in networks that produce overgeneralizations, with many of those patterns of overgeneralization occurring relatively late in development; and (iii) although changes are usually gradual, associative learning can result in shifts or spurts of development that also typically occur relatively late in development (e.g., Elman et al., 1998; Plunkett et al., 1992).

Second, associative learning provides an account of a number of attested developmental patterns. A strengthening of network connections as a result of associative learning accounts for gradual increases in the suppliance of forms in obligatory contexts (Stage 2). A subsequent expansion of network connections, also due to associative learning, accounts for a developmental shift in the production of the sign network (Substage 3.1). The developmental shift is characterized by the co-occurrence of increases in overgeneralizations, the appearance of sign networks in a subsequent phase, and high SOC scores. The first two co-occurring phenomena are attributed to the expansion of network connections to new forms and functions, resulting in "overlapping" sign networks. As indicated by the high SOC scores, the expansion appears to occur only after the sign network has achieved a threshold strength of connectivity. Subsequent modifications of connections between the overlapping sign networks, as a result of the continued processing of native-like input and output, account for decreases in overgeneralizations (Substage 3.2). In these ways, overgeneralization and its retreat, as well as increases in SOC, can be interpreted as manifestations of incremental changes in the connections between forms and functions.

Third, the account of acquisition orders utilizes relatively concrete linguistic properties, organized into hierarchical sign structures, in conjunction with connectionist, environmentalist, and compositionist explanations. Building from Brown (1973), the orders are partially attributed to cumulative increases in the capacity to process the formal and functional properties of language elements. By specifying this Compositionist Principle of Acquisition Orders, we have also been able to precisely conceptualize the nature of overgeneralization and its retreat,

specifying the domains of overgeneralization in relation to an acquisition order of phases. Fourth, the Principle of Task Variation has indicated how a connectionist approach to understanding linguistic variation may contribute to a theory of acquisition orders, especially by aiding in the operationalization of a threshold level for developmental shifts. Fifth, these assumptions and constructs have allowed a greater specification of the construct that Mellow, Reeder & Forster (1996) have described as the developmental course of SLA. Central to this account of longitudinal development are stages, substages, phases, and subphases of the development of specific sign networks. Overall, we believe that the SCEC Framework provides a promising direction for understanding many aspects of interlanguage development.

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NOTES

1. Although most proponents of connectionism argue that one of its strengths is that the networks are neurally plausible or neurally inspired (e.g., Broeder & Plunkett, 1994; N. Ellis, 1998, 1999; Rumelhart & McClelland, 1986b, pp. 136-138), Fantuzzi (1992) and Segalowitz and Lightbown (1999) have questioned this claim.
2. Reverse-order reports are sequences of clauses that are not presented in the chronological order in which they occurred. The following example is from Bardovi-Harlig (1994, p. 244): *John entered college in 1980. He had graduated from high school five years earlier.*
3. Klein (1995, pp. 43, 48) appears to report results that oppose this trend: Present perfect forms appeared early in relation to the development of simple past. However, the use of present perfect is described as being "much less frequent." Without descriptive or inferential statistical reports of the verb form suppliance of the two learners that Klein describes, it is difficult to interpret the meaningfulness of the perfect forms that were supplied.
4. Bardovi-Harlig (1997, p. 380) indicated that "the present perfect progressive combines the meaning of the present perfect with the notion of a continuous event or process" and provided the following example: *She has been practicing law for 5 years.*
5. Bardovi-Harlig (1997) also noted a similar, but weaker, relationship between present perfect and simple present.
6. Although different formulae are possible, a basic formula for SOC is the number of native-like suppliances of an element in obligatory contexts divided by the total number of obligatory contexts. In contrast, a Target-like Use analysis includes overgeneralization of a form and therefore a basic formula for Target-like Use is the number of native-like suppliances of an element in obligatory contexts divided by the total of the number of obligatory contexts added to the number of overgeneralizations of the form to incorrect contexts.
7. For unrelated items, a general prediction of the Competition Model is that the first forms that appear in production should be those that express the widest range of highly frequent functions.
8. Barrett (1986) also found that these two periods were preceded by a period of underextension.
9. Stage 1, Emergence, is considered to be too brief to be comprised of substages.

10. For example, in the sentence, *Hillerman unearthed an ancient pot*, the CCC# cluster at the end of the verb is very difficult to pronounce. This may result in the absence of the suffix, especially in speech, but also in writing due to pronunciation spellings.

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Dean Mellow is an Assistant Professor of Linguistics at Simon Fraser University. His research focuses on analyses of the increasing complexity of language in second language acquisition as found by longitudinal studies, as well as on quasi-experimental studies of the effects of instruction on language development.

Karen Stanley has an MA in linguistics from the University of South Carolina; her thesis involved original research in the development of grammatical structures by instructed adults. She has taught academic ESL for over 25 years at private and public institutions of higher education both within and outside the U.S.

A Comparative Analysis of Discourse Markers in English Conversational Registers[1]

Naoko Taguchi
Northern Arizona University

Using corpora of spoken American English conversations, the present study examines the use of discourse markers in different spoken registers. Three conversational corpora were selected for analysis: 12 family conversations, 11 professor-student conversations during office hours, and 10 server-customer conversations. Twelve discourse markers were identified based on previous literature, and their occurrences in context were analyzed using the Monoconc concordancing program. Quantitative and qualitative analyses show that there are considerable differences in the frequency distributions of discourse markers. These distribution patterns are interpreted in light of the functions of each discourse marker interacting with the typical characteristics of different conversational registers.

The routine use of discourse markers in conversation is no doubt a major characteristic of spontaneous and interactional spoken language. Discourse markers have attracted wide research interest and have been analyzed from a variety of perspectives (see, e.g., Blakemore, 1987; Brinton, 1990; Erman, 1987; Fraser, 1993; Jucker & Ziv, 1998; Östman, 1981; Schiffrin, 1987; Schourup, 1985; Stenstrom, 1998).[2] Some studies have analyzed a range of discourse markers, drawing general conclusions about the role of discourse markers as a class, while others have concentrated on the identification of individual markers and their core functions in discourse units. Both lines of research generally agree that discourse markers are inserts that are largely independent of the propositional content of an utterance and fulfill pragmatic functions in promoting interactiveness and coherence.

Despite the ample research findings on the types and functions of discourse markers, questions remain as to whether discourse markers exhibit similar distribution patterns across conversational contexts or registers. Recent developments in corpus linguistics have made it feasible to analyze large-scale authentic data (see, e.g., Biber, Conrad, & Reppen, 1998), and such analyses have been extended to conceptualize characteristics of spoken English (Leech, 2000). However, contrastive analysis across spoken registers is still underrepresented due to the limited availability of representative corpora. The present study intends to fill this gap by examining the use of a number of discourse markers across three conversational registers: conversations among family members, professor-student office hour conversations, and service encounters. Because specific characteristics of each situation (e.g., interlocutor relationships, purpose of communication) can greatly influence the patterns of spoken language, a comparison of language use over

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these different registers could expand our knowledge of how discourse markers vary in different conversational contexts. Therefore, this study aims to determine if there are differences in the use of discourse markers according to register and, if so, what situational characteristics may contribute to such differences.

LITERATURE REVIEW

Numerous studies have analyzed discourse markers in naturalistic conversations, examining their general linguistic and functional properties. An overview of previous research is provided below. The purpose of the literature review is to establish a collective definition of discourse markers in order to rationalize the selection of target discourse markers analyzed in the present study.

Linguistic Properties of Discourse Markers

Early work by Östman (1982) presents four basic linguistic features of discourse markers. Discourse markers are (a) short, (b) prosodically subordinate to another word, (c) independent from the content of the sentence, and (d) syntactically separate from the sentence. Hölker (1991) also states that discourse markers do not affect the truth conditions of an utterance, nor do they add anything to the propositional content of an utterance. Similarly, Fraser (1990, 1993, 1999) stresses that discourse markers do not affect the grammaticality of a sentence, nor do they create propositional meaning.

Brinton (1996) provides more detailed descriptions of the syntactic, phonological, lexical, and semantic characteristics of discourse markers. According to Brinton, the syntactic features of discourse markers include the following: (a) They are restricted to utterance-initial position, (b) they occur outside the syntactic structure or are loosely attached to it, and (c) they are optional. The phonological and lexical features include the following: (a) They are short and phonologically reduced, (b) they form a separate tone group, and (c) they are marginal forms and difficult to place within a traditional word class. Finally, semantically, discourse markers have little or no propositional meaning.

However, Brinton's (1996) formulation of discourse markers could be challenged. Although in Brinton's operationalization the position of discourse markers is restricted to utterance-initial position, several analyses show that discourse markers appear in various positions in utterances (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Helt, 1997; Jucker & Smith, 1998; Schourup, 2001). Schourup (2001), for instance, argues that the occurrence of the marker *well* differs from that of discourse connectives (e.g., *moreover, after all*) because *well* can appear before any word in a sentence (e.g., *I was the most, well, experienced adventurer in the group*) and can highlight a single word or phrase, while discourse connectives do not have such distributional flexibility.

Similarly, Brinton's (1996) claim that discourse markers are optional may underestimate the importance of functional properties of discourse markers. It is

true that discourse markers do not affect the grammaticality of a sentence and could be removed from the sentence without changing its propositional meaning. However, pragmatically, discourse markers are often necessary devices in conveying speakers' attitudes and emotions. For instance, Bolinger (1989) provides examples of multiple occurrences of the marker *well* when commenting on someone's misbehavior (e.g., *Well, well, well!*), or of *well* used as a prompt to elicit another response (e.g., *Well?*). These examples clearly show that *well* fulfills the indispensable function of conveying attitudes in certain discourse contexts. Thus, a detailed analysis of the functional properties of discourse markers in context is necessary in order to determine the contextual features that relate to particular discourse markers.

Functional Properties of Discourse Markers

Researchers generally agree that discourse markers fulfill pragmatic functions: They promote cohesion between utterances and affect the degree of involvement among speakers. Discourse markers are also believed to signal the relation of an utterance to its immediate context (Redeker, 1990; Schourup, 1985). These pragmatic functions were highlighted by Schiffrin (1987), who emphasized the transitional function of discourse markers. Schiffrin defines discourse markers as "sequentially dependent elements which bracket units of talk" (p. 31). Based on naturally occurring interview talk, she analyzed the distribution of 11 discourse markers over five linguistic classes: lexicalized clauses (*y'know, I mean*), particles (*oh, well*), conjunctions (*and, but*), time deictics (*now, then*), and complements (*so, because*). She concluded that discourse markers provide coordinates to the discourse contexts in which participants produce and interpret meaning. The contextual coordinates integrate different components of talk and contribute to discourse coherence. For example, the marker *y'know* functions to invite a hearer to attend to specific information, while the marker *now* indicates a speaker's orientation toward an upcoming subtopic and signals the shift in the flow of discourse.

Hölker (1991) also claims that discourse markers are related to the speech situation, and have an expressive rather than a referential function. Fraser (1993) explicitly distinguishes between content meaning and pragmatic meaning. Content meaning is the literal meaning, while pragmatic meaning is the underlying intentions or attitudes that the speaker tries to convey through the literal message. Discourse markers belong to pragmatic meaning: They do not represent the propositional content of the sentence, but signal the speaker's belief towards, or evaluation of, the message. Stenstrom (1994, 1998) claims that discourse markers create discourse boundaries throughout spoken interaction.

Previous research has also examined how discourse markers influence a hearer's comprehension of a message. Discourse markers have been discussed in Relevance Theory (Blakemore, 1992; Sperber & Wilson, 1986; Wilson & Sperber, 1993), which emphasizes that understanding an utterance is a process of seeking relevance in what the speaker said. Efficient communication is achieved when a

great amount of information is conveyed with the least processing effort by the hearer. Discourse markers are claimed to help reduce the processing load: They are used to indicate the relevance of one discourse segment to another, signalling how the utterance should be interpreted and what should be expected in the upcoming discourse (Anderson, 1998; Blakemore, 1987; Blass, 1990; Jucker, 1993; Stenstrom, 1998).[3] For example, *like* informs the hearer that some kind of example or approximation follows (Anderson). Similarly, Jucker (p. 440) shows that *well* is a "signpost" that tells the hearer that the upcoming utterance is not optimally coherent with respect to the previous one. It indicates a shift in the conversational context, such as embarking on a new topic or mitigating some sort of confrontation. Similarly, Lenk (1998) demonstrates how the markers *anyway, however, still, incidentally, actually*, and *what else* signal the relevance of the utterance within the conversational context.

Summary of Discourse Marker Properties

To sum up, the literature claims that discourse markers are separate from the propositional content and syntactic structure of an utterance. They do not encode lexical meaning, but convey the pragmatic meaning of an utterance. Discourse markers function as interactive devices for speakers and hearers to help develop continuity and coherence in communication. They allow speakers to highlight important elements in a conversation, and convey their emotive and attitudinal stance toward the message. They also help hearers to follow speakers' trains of thought and assist in the interpretation of the utterance.

Despite general agreement on the functions and linguistic properties of discourse markers, there is great disagreement as to which items should be considered as discourse markers. There is no generally accepted list of discourse markers in English. Table 1 displays a list of items that have been identified as discourse markers in the literature.

PURPOSE OF THE STUDY

Although previous studies have provided a reasonably well-formulated analysis of the linguistic and functional properties of discourse markers, little research has compared their use in different conversational situations. Erman (2001), Jucker and Smith (1998), and Fuller (2003) are among the few studies that directly address the relationship between patterns of discourse markers and contextual characteristics. Using a corpus of British English conversations, Erman (2001) compared the functions of *you know* in teenage and adult talk. The study documented that *you know* in teenage talk serves a comprehension-securing function, the speaker making sure that the listener understands the specific references made (e.g., *You know that orthopedic doctor?*). However, in adult conversations *you know* occurs more as a text monitoring device, introducing a change of topic or allowing the speaker to stall for time when engaged in a self-repair, such as a word search. As

Table 1: Items Identified as Discourse Markers

Study	Items Identified as Discourse Markers
Östman (1982)	*well, like, kind of, sort of, you know, I mean, oh, now, but, and, uh*
Schourup (1985)	*well, like, kind of, you know, I mean, oh, now, ah, mind you, uh*
Schiffrin (1987)	*well, you know, I mean, and, but, or, so, because, now then, oh*
Fraser (1990)	*well, you see, now, but, so, ah, all right, anyway, OK, or, then*
Redeker (1990)	*well, you know, I mean, oh, but, so, ah, all right, OK, because, mind you*
Stenstrom (1994, 1998)	*well, you know, you see, I mean, oh, now, all right, anyway, yeah, OK, like, really*
Biber et al. (1999)	*well, right, now, I mean, you know, you see, look*

Erman (2001) concludes, the use of *you know* could be influenced by the type of discourse and subject matter being discussed rather than by the relationship between the speakers. Her conclusion implies the need for subsequent research that examines the occurrences of discourse markers over different discourse contexts.

Jucker and Smith (1998) compared tape-recorded conversations between pairs of strangers and pairs of friends. Two types of discourse markers were identified: reception markers, which signal a reaction to a message (e.g., *yeah. OK*), and presentation makers, which modify the information presented by the speaker (e.g., *you know, I mean*). The results showed that reception markers were more common between strangers than friends, reflecting differences in the nature of the interaction. Jucker and Smith's analysis is exclusively based on the dichotomized classification of reception and presentation markers. However, individual discourse markers may not necessarily fall within these two discrete categories; some discourse markers may serve both functions. Thus, additional research in this area could prove valuable in order to determine empirically whether discourse markers serve reception or presentation functions or both across different conversational registers.

The presentation and reception markers introduced in Jucker and Smith (1998) were further examined by Fuller (2003) in two speech contexts: semi-formal interviews and casual conversations. The study revealed that contextual characteristics such as the roles of speakers and the relationship between the interlocutors could

shape the distribution patterns of certain discourse markers. For instance, the markers *oh* and *well* occurred more frequently in casual conversations. Although *oh* was initially categorized as a presentation marker by Jucker and Smith, Fuller found that it also functioned as a reception marker during interviews when the interview participants were in the role of listening and responding. The marker *you know*, on the other hand, appeared more often in the interview data because it functioned to frame information and to enhance common ground between the interlocutors.

Since discourse markers are purported to assist the speaker and hearer in managing the flow of communication, situational characteristics such as interlocutor relationships or the purpose of communication could greatly affect their use. Thus, in order to develop better insights into the nature of discourse markers, there is a need to characterize their patterns across various spoken registers, expanding on the previous work cited above.

Register is defined as "a language variety viewed with respect to its context of use" (Biber & Finegan, 1994, p. 4). Ferguson (1994, p. 20) states that register is the language used in a communicative situation that recurs regularly in a society (in terms of participants, setting, and functions) and which tends to develop identifying characteristics over time. Thus, the core of register analysis is the exploration of the link between linguistic features and situational characteristics. Discourse markers, a class of discourse devices, are subject to such investigation because they may serve as pervasive indicators of register differences. Thus, the purpose of the present research is to investigate whether register variation exists in the use of discourse markers. The study aims to quantify the distributions of discourse markers across registers and to examine how their occurrences vary according to situational variables.

Among many potentially useful situations for analysis of discourse markers, this study focuses on three conversational registers: family conversations, professor-student office hour transactions, and service encounter conversations.[4] Biber (1994, p. 40) proposes a set of situational parameters that characterize registers, such as interlocutor relationship, setting, and communicative purposes, which are useful in characterizing these three registers. Family conversations usually take place in private settings, while service encounter conversations take place in public. The extent of shared knowledge and emotional involvement tends to be greater in family conversations than in service encounters. Family discourse usually involves expressions of personal feelings and attitudes, while service encounter conversations are designed for the transfer of information or goods. Professor-student office hour interactions, on the other hand, seem to stand between family conversations and service encounters because they take place in semi-public settings, but, similar to conversations among intimates, the interaction may often reflect a great degree of personal involvement between speakers. Given these situational differences, these three registers are a useful database for exploring the link between the relative distributions of discourse markers and contextual characteristics.

The present study has two purposes: to quantify discourse markers across registers and to explore the link between their distribution patterns and situational variables. The study is guided by the following two research questions:

(1) Do the frequency and use of discourse markers differ among the three conversational registers: family conversations, professor-student office hour transactions, and service encounter interaction?

(2) If so, to what extent can the differences be attributed to the situational characteristics of individual registers?

METHOD

Selection of Discourse Markers for Analysis

Operational Definitions of Discourse Markers

It is beyond the scope of this paper to analyze all the discourse markers identified in previous studies. In order to rationalize a selection of discourse markers for analysis, a principled set of criteria was established based on previous literature. Because there is no unified definition of discourse markers, the items that are considered as qualifying as discourse markers are numerous. Thus, the purpose of establishing the working definition is to specify the subgroup of discourse markers to be analyzed in the current study.

According to previous research, linguistic properties of discourse markers include the following: (a) they are inserts (i.e., single words, verbal formulae) which can be prosodically subordinated to another word and are syntactically independent from an utterance, and (b) they convey little lexical meaning. Functional properties include the following: (a) they convey pragmatic/expressive meaning and indicate the speaker's attitudes, and (b) they are interactional devices which contribute to the evolving progress of discourse continuity and discourse coherence.

Selection of Target Discourse Markers

In order to limit the number of target discourse markers, these operational definitions were applied to each of the discourse markers identified in the eight previous studies (see Table 1). Based on their linguistic properties, linking adverbial and coordinating conjunctions (i.e., *like, because, then, and, so, anyway, but*) were excluded from the analysis because they can be part of syntactic structures and signal connections or transitions between elements in a text (Biber et al., 1999). The marker *mind you* was also excluded because it does not occur frequently in American English. In addition, interjections such as *ah*, which indicate purely emotive moves (e.g., hesitation, surprise), were excluded from the analysis. As a result, 12 discourse markers were left for the analysis: *well, kind of (sort of), you know, I mean, OK, now, oh, right, look, you see, yeah,* and *really.*

Table 2: Corpora for this Study

Corpus Description	Number of texts	Number of words
Family conversations	12	54,694
Professor-student office hour transactions	11	50,412
Service encounter conversations	10	56,478

Data Collection

Three corpora of transcribed naturalistic conversations of American English were selected for the current study, representing each register: family, professor-student office hour transactions, and service encounter interaction (see Table 2).[5]

Family conversations were taken from the *Longman Spoken and Written English Corpus*.[6] Professor-student and service encounter interaction came from the *TOEFL 2000 Spoken and Written Academic Language Corpus*.[7]

Data Analysis

Monoconc software was used to sort data in this study. Monoconc is a publicly available concordancing program that allows the user to search for specific words in a corpus and provides lists of the occurrences of the words in context, along with frequency information. Each lexical item was entered as a search word in the corpora in order to generate a list of its occurrences in context. Then, each list was checked manually by the researcher in order to exclude the items which did not function as discourse markers.

The criteria for these judgements were based on the operational definitions of discourse markers established above. Although these definitions helped to identify the group of target discourse markers, more detailed criteria were needed for individual markers. The lexical items identified as discourse markers often occur in different linguistic functions, and some lexical items that function as discourse markers also have clear grammatical uses. Because these linguistic and grammatical functions are relatively easy to identify, this study established a set of linguistic functions that disqualified an occurrence of a particular item as a discourse marker. That is, when the items appeared in the linguistic contexts summarized in Table 3, they were not counted as discourse markers. The established criteria are mainly focused on grammatical functions, but for some markers, fixed expressions (see the case of *oh* in Table 3 for instance) were also excluded from the count. Although it is true that the expressions such as *oh my god* or *oh no* also serve pragmatic functions, indicating speaker attitudes toward a previous proposition, this study limited its analysis to discourse markers as single entities, when they are stand-alone units and do not combine with other inserts or interjections.

Table 3: Linguistic Properties that Disqualify a Token as a Discourse Marker

I mean *you know* *you see (see)*	Subject and predicate in a sentence (e.g., *You know* what?; *You see* my point? *I mean* it.)
look	Phrasal or prepositional verbs (e.g., *Look up* the vocabulary.)
well	Adverb (e.g., You sang really *well*.) Fixed expressions (e.g., Is it summer session as *well*?)
now	Adverb with temporal meaning (e.g., I'm doing my homework *now*.)
kind of/sort of	Partitive of quality (e.g., It is a new *kind of* soup.) Fixed expressions (e.g., It's a good sign poster for that *sort of* stuff.)
yeah/oh yeah *OK* *right/all right*	Response to a question, request, or order (e.g., A: you have a pen? B: *Yeah*.) Adverb of exactness (e.g., You'll initial *right* here.) Confirmation check when *right* or *OK* are transcribed with rising intonation (e.g., You just gave me $10, *right?*)
really/oh really	Adverb (e.g., I *really* like your sweater.) Confirmation check when *really* is transcribed with rising intonation (e.g., A: She missed class today. B: *Really?*)
oh	Fixed expressions (e.g., *Oh* my god.; *Oh* no.)

In order to confirm the accuracy of data sorting, the regrounding technique (Seliger & Shohamy, 1989) was used, and the original data were sorted twice. The frequency of each discourse marker was compared between the first and second sortings, showing a 98.5% agreement rate. In addition, when functional analysis was required, 20% of the data from each list was randomly selected and independently coded by a second rater who had experience in discourse analysis. The agreement rate between the two raters was 94.5%.

Finally, because the three corpora had different lengths, normalization was applied to make the frequency counts comparable with each other. The raw frequency count of each discourse marker was divided by the total number of words in the corpora and multiplied by 50,000. Thus, frequencies are reported as the occurrence of each marker per 50,000 words, since all corpora are approximately this long. Normed counts, rather than raw counts, are reported in this study because normed counts convert the number of occurrences of a particular discourse marker to a standard scale, informing us how often individual discourse markers are found in a fixed amount of text (See Biber et al., 1998, p. 263-264 for an explanation of normalization).

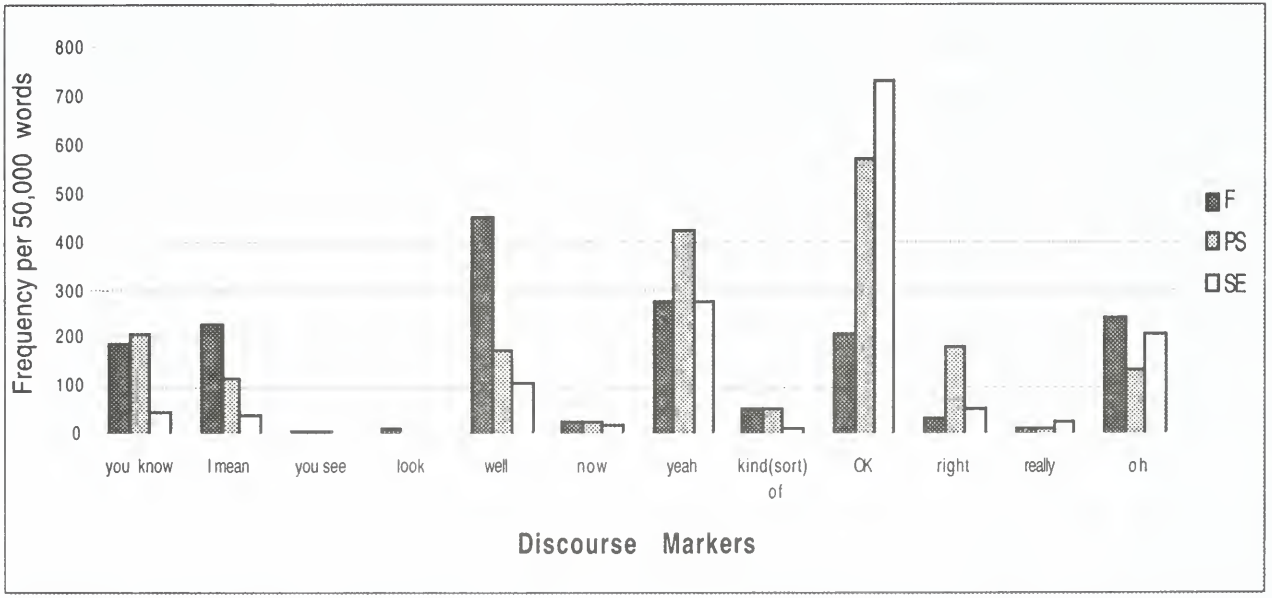
RESULTS AND DISCUSSION

Overall Distribution Patterns of Discourse Markers

Figure 1 reports the frequency distributions of the twelve discourse markers across discourse contexts. As seen in Figure 1, the markers *you know* and *I mean* are much more common in family and office hour conversations compared with service encounter situations. *Well* is twice as frequent in family interaction, compared with office hour and service encounter interactions. The markers *you see, look*, *now*, and *really* are not common in the corpora.[8] The marker *OK* is much more frequently used in office hour and service encounter interactions than in family conversations. *Yeah* and *oh* show similar distribution patterns across registers. *Right* appears most frequently in the office hour corpus.

The following section provides more detailed discussions of a selection of six discourse markers *I mean, you know, OK, right, yeah,* and *oh*, focusing on how register characteristics may interact with their distribution patterns. These six discourse markers were selected in part because they were relatively prevalent in the data. Originally the marker *well* was also considered for the analysis; however, due to the extensive and complex functional characteristics of *well* claimed in the previous literature, it was decided that this marker requires individual, separate analysis, possibly in a future study.[9]

Figure 1: Distribution of Individual Discourse Markers



Note: F= Family conversations; PS = professor-student office hour transactions; SE = service encounter conversations.

Analyses of Individual Discourse Markers

The Discourse Marker I mean

The marker *I mean* has the major function of signalling repair and consequently often prefaces an expansion or clarification of the speaker's prior utterance (Schiffrin, 1987, p. 295). Therefore, *I mean* contributes to conversational continuity by helping to orient the hearer to the upcoming message.

Excerpt (1) below, from the family corpus, illustrates the use of *I mean* to signal a repair.

(1) Family conversation (123701.txt)[10]

1		Mother:	That room, that we had had our church in has returned to what was originally its purpose which was to be an all purpose parish hall.
2		Son:	Yeah.
3		Mother:	It would be all right.
4		Son:	Yeah.
5	→	Mother:	We would still need a chapel of some sort. The idea is okay, **I mean**, we could do a lot of with space.
6	→	Son:	Oh, yeah, it's a good idea, it's a good idea. **I mean** it would bring, it would probably make us more visible.
7		Mother:	As well as increasing our facilities, the only thing is twenty thousand dollars is just barely giving the architect enough. Well, they won't kick in until there's a matching ten thousand. So if they have twenty thousand dollars that still isn't going to build the church. Do you think we should do it?
8		Son:	I don't know . . .

Using *I mean* at line 5, the mother clarifies and expands her prior utterance, explaining why "the idea [using the space as an all-purpose parish hall] is okay." In the subsequent turn, at line 6, the son also uses *I mean* as he clarifies why "it's a good idea" to use the parish hall. Excerpt (2) also illustrates the repair/clarification function of *I mean*.

(2) Family conversation (123701.txt)

1		Son:	Did he have Mexican hair or did he have American hair?
2	→	Mother:	What do you mean? He had black, black hair. **I mean**, he had black man's hair.
3	→	Son:	**I mean**, did he have, if it was different, some black people have Mexican hair, some black people have nappy hair. Nappy hair is like the nappy hair is like the real short curly stuff, you know, like Mondero has.
4		Mother:	Oh.
5		Son:	Like, and Mexican hair is like straighter. It's straight. It's like Jeff Jones.

At line 2, using *I mean*, the mother clarifies what she means by "black hair." The son begins his turn with *I mean* at line 3. The marker *I mean* here is also used to clarify meaning: The son uses it to clarify his initial question (line 1) after the mother's question in line 2 reveals that that was unclear or misunderstood.

Register characteristics can help us understand why the discourse marker *I mean* is more frequent in the family and professor-student corpora than in service encounters. Conversational exchanges in service encounter interaction tend to be short and to exhibit less personal involvement due to their business-oriented purpose involving the exchange of goods, money, and information. Conversely, family and professor-student office hour interaction often consist of more extended pieces of discourse, and participants tend to be engaged in conversation at a more personal level. Thus, it is possible that these two registers would require more instances of clarification or discourse repair.

The Discourse Marker you know

The major function of *you know* is to establish a mutual base of knowledge between the interlocutors and to promote cooperative interaction. *You know* asserts that there exists a shared orientation between the speaker and hearer (Schourup, 1985, p. 103). By using *you know*, the speaker is imparting information to the hearer, and at the same time appealing to the hearer to cooperate and to accept the information as shared knowledge (Biber et al., 1999, p. 1077; Erman, 1987, p. 169; Östman, 1981, p. 17; Schiffrin, 1987, p. 268). With *you know*, the speaker stresses the listener's role in conversation, drawing his or her attention to a piece of information.

The interpersonal functions of *you know* are also highlighted in Holmes's (1986, p. 7) two broad categories of *you know*: *you know* expressing speaker certainty and *you know* expressing speaker uncertainty. The former *you know* is used to reassure the listener about the validity of the information presented. In the latter function, the speaker expresses his or her uncertainty about the validity of the message or the listener's understanding of the message and thus seeks reassurance or agreement from the listener. Holmes distinguishes these two functions according to a variety of factors, such as intonation patterns, the speaker's relationship to the addressee, and the degree of shared knowledge.

Similarly, Schourup (1985, p. 136) states that *you know* in the middle of the turn signals that the speaker is actively engaged in conversation and is concerned with whether the speaker and hearer are on the same track. In extended discourse, *you know* helps sustain the listener's attention to the ongoing interaction. It assists the speaker in checking whether the hearer is still tuned in to what is being said.

In Excerpt (3) below, a professor is imparting his knowledge about Chinese history and is presenting it as knowledge shared by the student by using *you know*.

(3) Professor-student conversation (humhioh 068.txt)

1	→	Professor:	**You know**, the Chinese never went around trying to convert people to Confucianism. This, you know....
2		Student:	Yeah.
3	→	Professor:	**You know**, they were, again, inherently conservative.They just thought **you know** this is great, got everything set up, everybody else is screwed, **you know**. Leave them to their own devices. **You know** the Chinese are busy building a big wall, **you know**, to keep people out. Not trying to take other people over. And, oh **you know**, the Mongols would, **you know**, invade China.

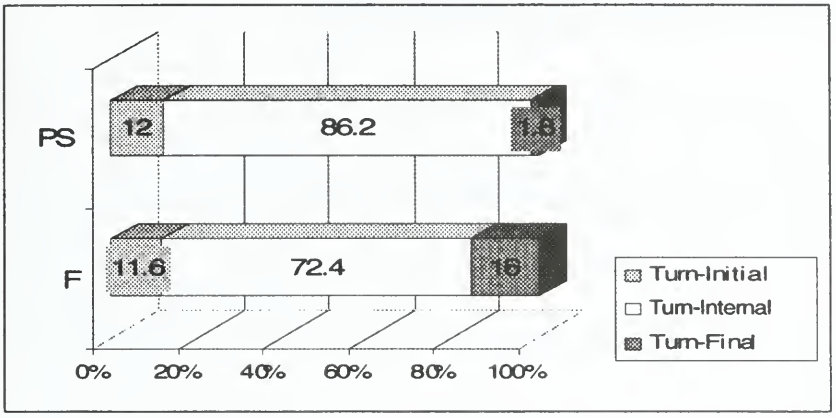
The frequency of *you know* in the conversation reflects the professor's tacit effort to get the student to accept the presented information and to integrate it as mutual knowledge. This effort is acknowledged by the student, as seen by the student's response, *yeah,* at line 2 following the professor's first utterance. With *yeah*, the student indicates that the information provided by the professor is being attended to and understood (see also the discussion of the discourse marker *yeah* below).

To sum up, *you know* is an indicator of striving to attain rapport and mutual understanding between the interlocutors (Östman, 1981). This function of *you know* becomes important in this analysis because the family and professor-student corpora have more incidences of *you know* than the service encounter corpus. Conversations among family members and between professors and students are usually topic-oriented and tend to involve longer stretches of discourse, often in the form of a narrative, with a greater degree of interlocutor involvement in the interaction. Such conversational features are quite different from those of service encounter situations, in which conversational exchanges tend to be short, business-transactional, and highly structured and routinalized. Due to these differences, *you know* is more common in the family and professor-student interaction, possibly because speakers use it to sustain the interest of listeners, to draw them into the topic of conversation, and to check their understanding.

Although the frequency of *you know* is similar in family and professor-student conversations, there seems to be some difference in terms of where in an utterance *you know* occurs. Figure 2 shows the percentages of *you know* identified either at the beginning, middle, or end of a speaker turn in the family and professor-student corpora. The percentages in the two registers are considered comparable because the raw counts of *you know* are very similar (frequencies of 190 and 210 in the family and professor-student corpus, respectively). The figure shows that *you know* occurs in turn final position nine times more frequently in family interactions than in professor-student conversations.[11]

According to Holmes (1986), turn-final *you know* indicates the speaker's confidence that the hearer knows the thing being referred to. Erman (2001) calls this function of *you know* a "comprehension-securing function"; the speaker marks

Figure 2: Distributions across turn positions: *you know*



Note: F= family conversations; PS = professor-student office hour transactions; SE = service encounter conversations.

termination of a turn with *you know*, and the hearer responds by showing acknowledgement. Turn-final *you know* attempts to prompt a response from listeners, appealing to their (presumed) shared knowledge, and urging them to accept information as given or known. Turn-final *you know* could thus be interpreted literally as "as you know," indicating more presumed certainty in the information provided (Östman, 1981, p. 21).

An example of turn-final *you know* in family conversation is given in Excerpt (4) below.

(4) Family conversation (122301.txt)

1	→	Wife:	I just, I thought he'd do a really bad job, but I think he was great. I was I was expecting him to do a worse, **you know**.
2		Husband:	Yeah, I guess.

After providing her personal opinion on someone's performance, the wife finishes her turn with the marker *you know*, which is followed by the husband's hedged *yeah* in line 2. Even though the husband does not seem to totally agree with his wife's statement, the wife's *you know* prompts an acknowledgement from him. Thus, the marker *you know* here urges the listener to accept the information as given or known (whether or not it actually is).

It is possible that because family members share more knowledge and experiences, speakers can more easily appeal to hearers' shared knowledge with *you know*, thus accounting for the higher frequency of this discourse marker in the family corpus. Speakers might end their turns with *you know* more often in family discourse because they are more confident that hearers, who are more likely to

share the speakers' current state of knowledge or feelings, will accept the information and understand the speakers' feelings or ideas.

The Discourse Marker OK

The major function of *OK* is signalling the reception of a message. According to Biber et al. (1999), *OK* usually serves as a compliant response to directives, suggestions, offers, and permission-giving. For example, a common speech act in professor-student interaction is professors giving advice to students about the classes they should enroll in or about the projects they are working on. Using *OK*, the student can signal to the professor that his or her advice is being attended to and accepted. This function of *OK* is illustrated in Excerpt (5), a student-professor conversation during a regular academic advising session. In each turn the student uses *OK* in order to acknowledge the professor's suggestions about choices of history classes:

(5) Professor-student conversation (humhioh 068.txt)

1		Professor:	History 47 is offered.
2	→	Student:	**OK.**
3		Professor:	But history 489 is offered.
4	→	Student:	**OK**.
5		Professor:	So, if you're interested in taking something with me.
6	→	Student:	**OK**.
7		Professor:	that would be something you could do.
8	→	Student:	**OK**.

Similar to professor-student conversations, in service encounters, *OK* is also used as a response form signalling that the message has been accepted and understood. This feedback signal is frequently observed as a response to a request for service or information, which is a common speech act in this register. For instance, in Excerpt (6), the server's *OK* at lines 3, 5, and 7 functions as a response to the customer's requests or instructions regarding the type and number of photocopies to be made. The customer also uses *OK* at lines 6 and 10, showing that the server's information is understood and accepted.

(6) Service encounter conversation (en130)

1		Server:	Hi.
2		Customer:	Hi. Um...I need four copies of each of these.
3	→	Server:	**OK**.
4		Customer:	Double sided.
5	→	Server:	Double sided. **OK**. This one . . I might have a hard time double siding because, um, unless you cut the fringes off, otherwise the, machine'll eat it.
6	→	Customer:	Oh, **OK**. Well I can cut [3 syllables]. It doesn't have to be double sided.
7	→	Server:	Yeah. **OK**. And this-just four copies?

8		Customer:	Yeah.
9		Server:	I'm not going to be able to do these double sided cos the machine is, [2 syllables] paper, [4 syllables].
10	→	Customer:	**OK**.
11		Server:	Is that OK?
12		Customer:	Yep.

This example illustrates that *OK* assists in the interactive achievement of discourse purposes, in this case, the completion of copy-making service. Frequent use of *OK* contributes to the efficient and prompt completion of business and information exchange in service encounters.

Another major function of *OK* discussed in the previous literature is *OK* as a transition marker (Beach, 1993; Condon, 2001; Merritt, 1984). In this function, *OK* signals the reception of a message, but at the same time it indicates a transition in the discourse and marks a shift in the direction of conversation. Merritt observed this dual function of *OK* in service encounter interaction, emphasizing that service encounters are routinized conversational acts in which the transition to each successive stage is highly expected. According to Merritt, service encounters typically consist of five phases: access, selection, decision, exchange, and closure. *OK* characterizes the routine nature of service encounters and functions as a bridge or linking device between phases of an encounter. Condon elaborates further on this use of *OK* and considers *OK* as a "default verification device" which signals a transition in discourse. The default verification device becomes most salient when linkings of utterances appear in routines (Condon, p. 497). Condon found in her analysis that *OK* frequently initiates routines of decision making and is followed by fixed expressions such as suggestions or requests. This default use of *OK* could be more common in service encounter discourse because these interactions usually consist of a series of structured and routinalized exchanges.

In the present analyses of the service encounter corpus, *OK* is also common during closing routines in the interaction. It often co-occurs with *thank you* and functions as a transition marker when the service transaction is nearly completed and the customer is ready to leave, as shown in the use of *OK* at line 4 of Excerpt (7) below:

(7) Service encounter conversation (en210)

1		Server:	. . . would you put your student I. D. on there?
2		Customer:	It's already on there.
3		Server:	**OK**, great thanks. [types on keyboard] [printer sounds]
4	→	Customer:	**OK**, thank you.
5		Server:	You have a good day.
6		Customer:	You too.

This transition function of *OK* may be more common in service encounter discourse because service encounters consist of a series of expected, structured,

and routinized exchanges. Service encounter interactions are often goal or task-oriented and aimed at the prompt completion of particular actions, namely exchanges of goods, information, and money. The marker *OK* seems to facilitate the completion of these tasks by marking transitions between the stages involved in service encounter interaction, such as opening, bidding, transaction of goods, and closing. As Beach (1993) claimed, *OK* displays an understanding of the prior utterance, but at the same time it indicates readiness for a transition in the discourse. *OK* serves to set up a new turn and topic, and thus facilitates the current speaker's actions. This function of *OK* thus seems important in service encounter interaction that includes numerous discourse transitions and exchanges.

In the present analysis, *OK* appears least frequently in the family corpus. This could be because family members have less need for explicitly signalling a reaction to a message because of their shared background and knowledge. As shown in Jucker and Smith (1998), the more distant the interlocutor relationship is (e.g., strangers), the greater the need for the use of backchannel signals such as *OK* in order to assure that the communication is progressing well and that the information has been accepted and integrated into the listener's current state of knowledge.

Another possible reason for the different distribution of *OK* is the different purposes of interaction across these three registers. As noted above, *OK* often signals the reception of a message and completes a conversational sequence. While family interaction is less likely to be focused on exchanging new information, service encounter and professor-student conversations include numerous short information exchanges and frequent turn exchanges, consequently providing greater opportunities for *OK* to occur in the reception function.

The Discourse Marker right

The marker *right* resembles the use of *OK* in that it indicates understanding, compliance, and agreement with the previous remark (Biber et al., 1999; Jucker & Smith, 1998). This function of *right* can be seen in the following professor-student conversation:

(8) Professor-student conversation (busatoh088.txt)

1		Student:	well what I kind a did is jump down to here thinking Ok I know the, the uh, the figure under row zero under my slide variable X seven
2	→	Professor:	**Right.**
3		Student:	is gonna be that number so I just started
4		Professor:	[many unclear syllables] right.
5		Student:	doing the simple
6	→	Professor:	**Right right**, so
7		Student:	Instead of realizing that if everything else is zero it cuts them out, a lot of your work [few unclear syllables].

8	Professor:	Yeah, that's, and that's what they're after on this. It's that you're,recognize that if if exponents five are the basic variables then you can figure out what the values are.
9 →	Student:	**Right.**
10	Professor:	Without going through anything else.
11	Student:	OK.
12	Professor:	Because in effect everything else can be dropped out of the problem.
13 →	Student:	**Right.**

In Excerpt (8), the professor uses *right* at lines 2 and 6, indicating that the student's solution to a mathematical problem is accurate and adequate. The student also uses *right* at lines 9 and 13, indicating that the professor's explanation is adequate and thus understood.

Right is approximately six times more frequent in the professor-student corpus than in family and service encounter interaction. These results may be caused by the fact that professors and students use *right* not only as a confirmation marker when information is attended to and accepted, but also as an evaluative response when some answers or solutions are presented regarding the problem under discussion. Thus, in the professor-student register, the marker *right* seems to have a literal use and may be interpreted as "You're right," confirming the degree of accuracy or truth value of the information presented. This function of *right* could be more pervasive in professor-student interaction because conversations in this register are often oriented toward the exchanges of academic information or facts gleaned from textbooks or class lectures. These exchanges might invite the use of more evaluative confirmation markers, such as *right*, as well as the simple reception markers (e.g., *OK, yeah*).

The Discourse Marker yeah

Jucker and Smith (1998) suggest that the major function of *yeah* is a backchannel cue or reception marker, marking a response to a statement. Similarly Schegloff (1981) notes that vocalizations such as *uh huh* or *yeah* are signals of attention, interest, or understanding on the listener's part and assist in the smooth continuation of a conversation. Schegloff considers *yeah* as an indication of passing on the opportunity to take a turn, which therefore encourages the speaker to continue. *Yeah* is thus a signal that a conversation is accomplished collaboratively between participants. *Yeah* as a reception marker is a useful device to show that communication is in progress, and new information is being integrated into the ongoing interaction.

In Excerpt (9) from a service encounter interaction, by responding with *yeah* at lines 5 and 7, the customer is signalling to the server that the information is being understood and accepted.

(9) Service encounter conversation (n210)

1		Customer:	I just need this hold like released. I just paid for this but I went overthere and they said.
2		Server:	It didn't, it didn't release?
3		Customer:	Um I'm sure if that one's I think that one was done, but this one's not done yet and they sent me back over here because I just paid this parking ticket but it wasn't released yet I guess.
4		Server:	[types on keyboard] it should have been let's take a look here.
5	→	Customer:	**Yeah**.
6		Server:	Unfortunately I'm not the one to release it [unclear word]
7	→	Customer:	**Yeah**.
8		Server:	Oh no student line which is this one. OK. [unclear word] What I'm going to ask you do
9		Customer:	Uh huh
10		Server:	Is step down to Student Accounts on the left hand counter.
11		Customer:	OK.
12		Server:	And give them this paper and then they'll take the hold off.
13		Customer:	OK.

However, the present analyses reveal an additional function of *yeah*. The marker *yeah* also occurs as a discourse link or connective in which the speaker indicates acknowledgement of information with *yeah*, but also uses *yeah* as a take-off for further talk. The speaker does not simply use *yeah* to acknowledge what the other has said, but, following *yeah*, continues with an elaboration of the ongoing topic. This function of *yeah* is different from the reception function of *yeah* noted by Jucker and Smith (1998). In this function, *yeah* seems to correspond with Jucker and Smith's definition of *presentation markers*, namely markers used to introduce new information. *Yeah* is used both as a confirmation signal, responding to the information presented, and at the same time it is followed by further expansion of conversation, introducing more information or comments into the ongoing discourse. Thus, *yeah* functions to present or introduce further discourse development.

In the following professor-student conversation, the professor uses *yeah* at line 5 in order to confirm the student's understanding of the naval conference while subsequently expanding upon the student's explanation of the role of the naval conference during World War II.

(10) Professor-student conversation (humhioh_n71.txt)

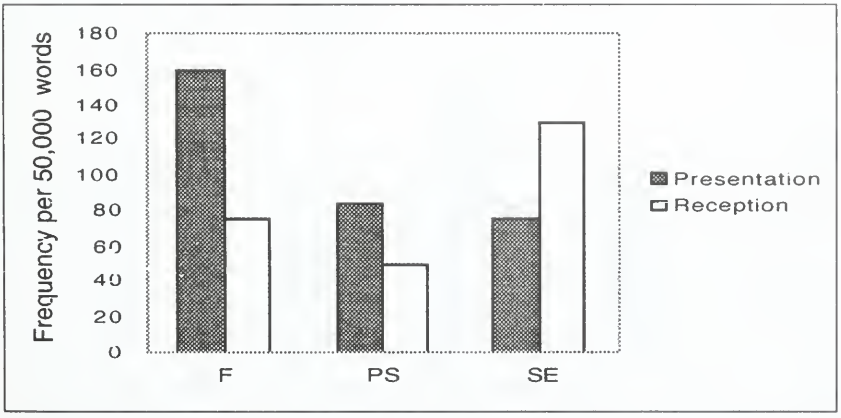
1	Professor:	You're confusing the League of Nations with the Washington Naval Conference.
2	Student:	OK, which one were we talking about
3	Professor:	Yesterday we were talking about the Washington Naval

4		Student:	Naval conference, that's the one where we were just getting rid of.
5	→	Professor:	**Yeah**, it was basically because during the World War II, there had been this great escalation
6	→	Student:	**Yeah**.
7		Professor:	Of, of arms of navy ships and all this stuff and so because we didn't join the League of Nations we were which Wilson's League of Nations was gonna be all encompassing and take care of all these things.
8		Student:	OK.
9		Professor:	And since we didn't join that then we had to go piece by piece and start thinking well what's important to us remember what I did I call a twenties foreign policy.

Thus, in the above excerpt *yeah* as a presentation marker in line 5 links the professor's utterance with what the student has said previously, in effect continuing and adding to the student's explanation. In contrast, the student's use of *yeah* at line 6 serves a reception marker function: It demonstrates the student's acceptance of the professor's information, but is not followed by additional talk by the student. In fact, the professor's talk is still in progress, as we see at line 7 where he continues the turn-in-progress explaining about the naval conference.

Figure 3 displays the frequencies of *yeah* serving the reception and presentation functions in the three registers. *Yeah* is coded as a simple reception marker when it appears as a single response or as an expression to show the reception of information alone (e.g., *Yeah, good*; *Yeah, I know*; *Yeah, thanks*), and passes on the opportunity to take a turn. When *yeah* does not comprise a turn in itself but is

Figure 3: Frequency of *yeah* functioning as a presentation and reception marker



Note: F= family conversations; PS = professor-student office hour transactions; SE = service encounter conversations.

followed by an elaboration of the ongoing topic or takeoff for further talk (i.e., *Yeah* followed by the further expansion of the discourse as in Excerpt [10], line 5) it is coded as a presentation function.[12]

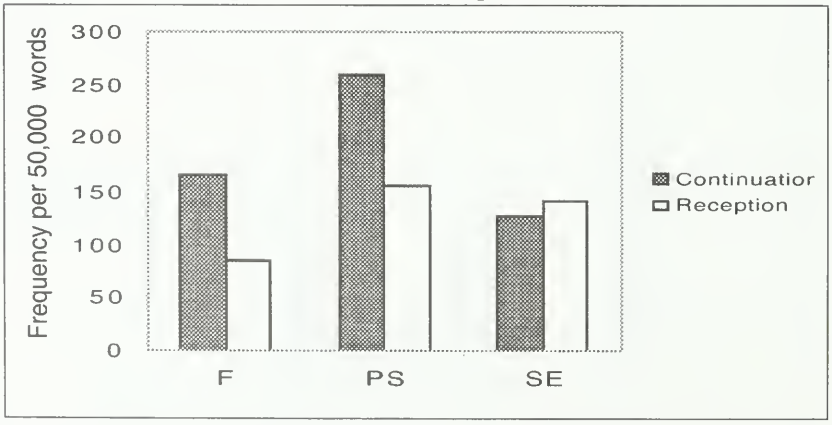
As shown in Figure 3, in the family and professor-student corpora, *yeah* occurs almost twice as often as a presentation marker, while in the service encounter conversations, the frequency is similar between the two functions. Because of the high personal involvement in the discussions and opinions exchanged in family and professor-student discourse, speakers seem to use *yeah* as a presentation signal. Speakers use *yeah* as a confirmation of what the other has said, but at the same time as a strategic device to take over the floor and develop communication further. This presentation use of *yeah* may be less common in service encounter situations, in which conversations are brief and are oriented toward specific goals.

The Discourse Marker oh

The reception use of *oh* is well noted in the previous literature (Biber et al., 1999; Heritage, 1984; Jucker & Smith, 1998; Schiffrin, 1987). According to Heritage, *oh* signals that the speaker's knowledge base is undergoing a state of change and is not continuative. Similarly, Schiffrin's analysis reveals that *oh* is a recognition display marker; it displays the speaker's reception of unanticipated or familiar information.

As with the marker *yeah*, in the present analysis *oh* is identified with a dual function: as a marker indicating the reception of information (reception marker) and as a marker shifting toward new information (presentation marker). Both functions of *oh* may encode the change of state claimed by Heritage (1984). The following example illustrates the reception function of *oh*.

Figure 4: Frequency of *oh* functioning as a presentation and reception marker



Note: F= family conversations; PS = professor-student office hour transactions; SE = service encounter conversations.

(11) Service encounter conversation (en115)

1		Server:	. . . Forty eight cents.
2		Customer:	What is it?
3		Server:	Forty-eight cents.
4	→	Customer:	**Oh.** That's with this though too.
5	→	Server:	**Oh.**
6		Customer:	I need to buy that.
7		Server:	OK. . . . . A dollar twenty eight . . .seventy two cents.

At line 4 the customer uses *oh* to respond to the server's information about the price. Here *oh* expresses the change of state of knowledge in the customer regarding the price. In the same line, the customer informs the server that he would like to purchase an additional item, which is not included in the forty-eight cents. The customer's utterance is followed by the server's *oh*, which similarly indicates a change in the state of knowledge of the server.

In addition to the reception function, *oh* also occurs as a presentation marker, serving as a "take-off signal" and introducing comments or new information. In this sense, *oh* marks a transition of the discourse content. *Oh* as a presentation marker is observed at the point of topic transition, introducing new discourse content, as in Excerpt (12) below:

(12) Family conversation (123701.txt)

1		Mother:	Your cross-country shirt, this one.
2		Son:	Yeah.
3		Mother:	Here, I don't want her to lie on it.
4		Son:	You can throw it on my bed.
5	→	Mother:	Here's what I'll do. You can put it on whatever hangar you want, but I'm going to put it right here. Okay and then you can do . . . okay. **Oh**, yeah, this was lying outside on my way to the car, so I thought well if I do have the day off Monday
6		Son:	Uh huh.
7		Mother:	That's what I'm going to do.

In the middle of the turn in line 5 there is a transition of conversation topic. *Oh* indicates the mother's change of knowledge state because she has just remembered that something was lying outside. At the same time, *oh* marks a topic change from the cross-country shirt to the thing she found outside.

Figure 4 displays the frequency of the discourse marker *oh* identified as a reception marker (i.e., acknowledgement of information) or as a presentation marker (i.e., introduction of a comment or a new topic) in each register. *Oh* is coded as a reception marker when it appears as a single response form or as an expression showing the reception of information (e.g., *Oh good*; *Oh interesting*), while it is coded as a presentation marker when followed by new information or comments, as in Excerpt (12).[13]

Figure 4 shows that although the overall frequencies of *oh* are similar in family, professor-student, and service encounter discourse, *oh* is approximately twice as common in its function as a reception marker in the service encounter register. Conversely, in family and professor-student conversations, more occurrences of *oh* function as presentation markers. These results could reflect the differences in the purposes and subject matter being discussed in the three registers. Family and professor-student registers are similar because they include many separate extended pieces of discourse that may require multiple shifts in topic. For instance, common topics of family conversation include describing various incidents that occurred either inside or outside the home, providing opinions or beliefs on various matters, telling stories or jokes, or recalling past events. Thus, *oh* plays an important role as a presentation marker in marking the introduction of new topics. The presentation function of *oh* is less salient in the service encounter corpus perhaps because in this register conversations tend to consist of short exchanges that are oriented toward specific goals rather than extended narratives or detailed descriptions of events. A service encounter interaction is likely to be focused on only one topic, rather than having shifts in topic.

SUMMARY AND CONCLUSIONS

The present study has aimed to investigate register variation in the use of discourse markers. The study fulfills two purposes: to compare the frequencies of discourse markers among three conversational registers and to explore the link between certain functions of discourse markers and characteristics of these communicative situations in order to pursue an explanation of their use.

The findings clearly indicate a relationship between distribution patterns of discourse markers and situational characteristics of individual registers. Discourse markers such as *you know* and *I mean* are more prominent in the family and professor-student corpora, perhaps reflecting the length of discourse and high personal involvement in conversation topics. Some discourse markers (e.g., *OK*) are much more common in service encounter situations, reflecting the focus on information exchange.

Another important finding is that some discourse markers fulfill different functions even within individual registers, supporting the multi-functionality claimed in the literature. The present findings also show clearly that some discourse markers serve both as presentation and reception markers. *Oh*, for example, is used both to display recognition of information by the listener and to introduce new information by the speaker. Similarly, *yeah* signals the reception of a message, but also serves as a presentation marker, behaving as a continuation latch: Following *yeah*, speakers continue with further elaboration of the ongoing topic. This multi-functionality of individual markers interacts with register characteristics. *Yeah* as a presentation signal is more common in the professor-student corpus than in service encounters, where interactions are short, business-oriented, and

routinized in nature. Family members may use *oh* more as a presentation marker than as a reception marker because the nature of these interactions, often involving multiple topics, provides more occasions for signalling topic shifts.

Based on the limitations observed in this study, several implications for further research are suggested:

1. Due to the large amount of data involved, the current analysis excluded certain categories of discourse markers, such as interjections, linking adverbials, or coordinating conjunctions. Analysis of the marker *well* was omitted for the same reason. Future research should address these items in order to provide a more unified analysis of discourse markers. In addition, in order to confirm the relationship between discourse markers and particular discourse contexts suggested in this study, more detailed analyses of the functions of discourse markers over different conversational situations are needed.
2. The target registers for comparison should be expanded. It would be particularly interesting to analyze presentation markers in registers whose speech is predominantly unidirectional, such as in lectures. Such studies would provide insight into whether discourse markers are a distinctive characteristic of spontaneous interaction, that is, whether multiparty communication is a prerequisite for the occurrence of discourse markers.
3. Discourse markers are linguistically simple, but functionally complex. They have many different uses, and there is a range of contexts in which they can occur. Therefore, an inquiry into the first and second language acquisition of discourse markers could add to our understanding of how children and second language learners expand their functional repertoire of linguistic forms in the process of language development.
4. This analysis did not attempt to correlate intonation contours with the content and context of the conversation. How the intended function of the discourse maker changes with voice inflection might prove to be of further research interest.

In summary, an insight gleaned from the current quantitative and qualitative analyses is that discourse markers display different profiles according to register. Each discourse marker serves particular functions, and certain discourse markers are more salient in particular contexts than others, reflecting the characteristics of the specific conversational context, such as communicative goals, settings, and interlocutor relationships. These features interactively make up the register. That is, what determines the patterns and functions of discourse markers is not only the relationship between the participants, but also the nature or purpose of the discourse, all of which contribute to the characterization of certain registers and consequently affect the distribution patterns of discourse markers. Discourse markers are a type of linguistic device which could serve as significant indicators of register variation.

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NOTES

[1] An earlier version of this paper was presented at the annual meeting of the American Association of Applied Linguistics in St. Louis in February, 2001.

[2] Previous studies have used a variety of terms to refer to the conversational devices that serve pragmatic functions (Jucker & Ziv, 1998): discourse marker (Brinton, 1990; Schiffrin, 1987; Stenstrom, 1998), pragmatic marker (Fraser, 1993), pragmatic particle (Östman,1981), discourse particle (Schourup, 1985), discourse connector (Blakemore, 1987), and pragmatic expression (Erman, 1987).

[3] Flowerdew and Tauroza (1995) demonstrated that a lecture with discourse markers was better comprehended than the same lecture without discourse markers. Fox Tree and Schrock (1999) also showed that the presence of discourse markers can reduce the hearer's processing effort and assist comprehension. The subjects in this study recognized the upcoming speech faster when they heard *oh* than when it was excised.

[4] Biber (1994, p. 51) notes that there is little consensus among researchers as to what counts as register, beyond the general association of register with situation variation. Following Biber (1994, p. 32), the present research uses *register* as a general cover term for all language varieties associated with different situations and purposes.

[5] The 12 texts of family discourse were from three families living in Ohio, California, and Oklahoma. All conversations took place among father, mother, and siblings in the morning when getting ready for the day. Professors in the 11 professor-student office hour texts were from four different disciplines: business, humanities, natural science, and social science. The 11 service encounter conversations were recorded in five different locations in a university: copy shop, library, bookstore, information technology service, and student business office.

[6] See Biber et al., 1999, for descriptions of the Longman corpus.

[7] See Biber, Reppen, Clark, and Walter (2001) and Biber, Conrad, Reppen, Byrd, and Helt (2002) for descriptions of the TOEFL 2000 Spoken and Written Academic English Corpus. The TOEFL 2000 Spoken and Written Academic English Corpus was sponsored by the Educational Testing Service.

[8] *Really* often occurs with other grammatical functions such as an intensifier (e.g., *It's really funny*).

[9] Some of the functional characteristics of *well* in the previous literature include marking insufficiency, mitigating face-threats, floor-holding, introducing new topics, introducing reported speech, building discourse coherence, prompting a response, and marking surprise (see, e.g., Bolinger, 1989; Fuller, 2003; Jucker, 1993; Schiffrin, 1987; Schourup, 2001).

[10] Interlocutors in each conversation are specified according to the speaker numbers in the transcriptions. Unintelligible sounds are transcribed either as [syllables] or [unclear word].

[11] Turn-initial position can be preceded by an interjection such as *ah, um*, or *uh*.

[12] The classification of the reception and presentation functions of *yeah* was confirmed by two raters for 20% of randomly extracted data, as explained in the methodology section. The agreement rate was 92%.

[13] The inter-rater agreement on the classification of reception and presentation functions of *oh* was 90% for 20% of randomly extracted data.

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Naoko Taguchi holds a Masters of Education Degree in Teaching English to Speakers of Other Languages from State University of New York at Buffalo. She is currently teaching at the ESL Department of Minnesota State University-Akita, Japan, and at the same time pursuing her Ph.D. in Applied Linguistics at Northern Arizona University. Her research interests include discourse analysis, interlanguage pragmatics, and learning strategies.

Vivid Phrasal Idioms and the Lexical-Image Continuum

John I. Liontas
University of Notre Dame

This article discusses problems arising due to lack of scholarly accord regarding the definition of the term idiom. *Following a critical review of several of these definitions, a new category of idiom, which I have termed* vivid phrasal (VP) idiom, *is suggested. The subclassification of VP idioms along a conceptual Lexical-Image Continuum is then presented. I suggest that while there still exist various means of categorizing idioms, agreement among idiomatologists regarding the definition of* idiom *can be reached and that, even more importantly, a common research agenda for second language acquisition researchers and language teachers is possible. Using empirical evidence, markedness factors, and implicational universals for VP idioms, I make recommendations for future idiom research. The article concludes with a discussion of the advantages of a common research agenda for the development of strategies to assure second and foreign language learners' idiomatic competence.*

Splurge, count on, for now, White House, spick and span, blackmail, chair, to throw money out the window, people who live in glass houses shouldn't throw stones. What do these expressions (a one-word verb, two-word verb, adverbial form, lexical compound, conjunct, compound noun, noun, saying, and proverb) have in common? All of them (and thousands more like them) have been classified as and are considered by some idiomatologists and scholars to be "idiomatic," depending on the definition of that term. The problem with idiomaticity today is that there are too many definitions for the cover term *idiom* to be of any practical use to second language acquisition (SLA) researchers and to language-teaching professionals working in second/foreign languages and applied linguistics. More often than not, the distinctions between definitions given by scholars are blurry at best. It suffices to say that today a majority of researchers has reached the consensus that idioms are, by nature, semantically noncompositional (Cacciari, 1993; Chomsky, 1965; Colombo, 1993; Cronk & Schweigert, 1992; Cutler, 1982; Flores d'Arcais, 1993; Gibbs, 1980, 1984; McGlone, Glucksberg, & Cacciari, 1994; Moon, 1997; Nattinger & DeCarrico, 1992; Titone, 1994). In other words, the sum total of the individual meanings of its indivisible parts does not lead one to the figurative meaning of an idiom.

My intention in this article is not to define anew the term *idiom*. Rather, it is to suggest that there can be a common research agenda on which both SLA researchers and language teachers can agree, as long as such an agreement is founded on the study of the same types of idioms under the same conditions of inquiry. To achieve this aim, the article is organized in two parts. The first part outlines problems that arise from the term *idiom* itself. Current definitions of *idiom* as found in

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widely used English dictionaries and applied by different idiomatologists and scholars are presented in an effort to illustrate the diversity of these definitions. Following a critical appraisal of the problems with such diversity, a new trilateral taxonomy of idioms, which I have termed *vivid phrasal (VP) idioms*, is offered. The three types of VP idioms are then described and discussed with reference to the Lexical-Image Continuum and within the context of several languages. The second part discusses the three main hypotheses resulting from the VP idiom classification and presents empirical evidence to provide support for the validity of these hypotheses. This part concludes with a discussion of markedness factors and implicational universals for VP idioms considered to be important to future SLA research into lexical representation, processing, and idiom understanding. Finally, the article concludes with a discussion of the advantages of a common research agenda for the development of *idiomatic competence*—the ability to understand and use idioms appropriately and accurately in a variety of sociocultural contexts, in a manner similar to that of native speakers, and with the least amount of mental effort.

MAKING THE CASE FOR VIVID PHRASAL IDIOMS: THE TERM *IDIOM* AND ITS DEFINITIONS

One of the thorniest issues in idiom research has been the question of how to define *idiom*. Throughout time, *idiom* has been defined differently by different idiomatologists and scholars. It is therefore important to begin this discussion with an understanding of the term. According to *The New Webster's Encyclopedic Dictionary of the English Language* (Thatcher & McQueen, 1980), *idiom* derives from the Greek lexeme *idios*, meaning "proper or peculiar to one's self." The following general entry is given:

> A mode of expression peculiar to a language or to a person; a phrase or expression having a special meaning from usage, or a special grammatical character; the genius or peculiar cast of a language; a peculiar form or variety of language; a dialect. (p. 420)

A similar, although much more detailed, entry can be found in *The American Heritage Dictionary* (Berube, 1985). Only the first entry is relevant to this article:

> 1. A speech form or expression of a given language that is peculiar to itself grammatically or that cannot be understood from the individual meanings of its elements. (p. 639)

Closely mirroring the definition above is that given in the *Oxford English Dictionary* (Murray, 1989), which is regarded by many scholars as the classic one.[1] The relevant entry is provided below:

> 3a. A form of expression, grammatical construction, phrase, etc., peculiar to a language; a peculiarity of phraseology approved by the usage of the language, and often having a significance other than its grammatical or logical one. (p. 624)

An even more precise entry is given in the *Longman Dictionary of English Idioms* (Long, 1990):

> An idiom is a fixed group of words with a special different meaning from the meanings of the separate words. So, **to spill the beans** is not at all connected with beans: it means "to tell something that is secret." (inside front cover)

All of these entries contain one definition that emphasizes the difficulty of inferring the meaning of the idiom as a whole from the meanings of its constituent parts. In addition, some kind of grammatical peculiarity and a predetermined social usage appears to be attached to the idiom. Based on these features alone—meaning, decodability, and institutionalized usage—we can distinguish at least three dimensions to the term *idiom*:

(1) meaning—the *semantic opacity* dimension
(2) decodability—the *structural* dimension
(3) institutionalized usage—the *conventionalized pragmatic* dimension.

One way of looking at an idiom, therefore, is to regard it as a complex tridimensional expression that is not explicable in terms of its individual words. Although individual idiomatologists each have a different take on this matter, the mixing of the dimensions just mentioned is so pervasive in the research literature that a clarification on these grounds is warranted. To begin, a rather extreme version can be found in Hockett's definition of *idiom* in *A Course in Modern Linguistics* (1958):

> Let us momentarily use the term Y for any grammatical form the meaning of which is not deducible from its structure. Any Y, in an occurrence in which it is not a constituent of a larger Y, is an *idiom*. A vast number of composite forms in any language are idioms. If we are to be consistent in our use of the definition, we are forced also to grant every morpheme idiomatic status, save when it is occurring as a constituent of a larger idiom, since a morpheme has no structure from which its meaning could be deduced. (p. 172)

According to this definition, there is no element in language which is not either an idiom or the constituent of an idiom. The implication is that every isolated morpheme is an idiom. It therefore follows that words not reducible to constituent morphemes—such as *look, chair, see, it*—are also idioms. Such a definition, however, runs counter to the generally accepted idea of an idiom as some

kind of "complex expression," as seen in the dictionary definitions cited above.

It might seem preferable, therefore, to follow Makkai (1969) who, at the other extreme, defines an idiom as, among other things, "a linguistic form whose meaning is unclear in spite of the familiar elements it contains" (p. 44). Given this definition, single-morpheme words (such as *look*, *chair, see*, and *it*) do not qualify as idioms since they do not contain other elements. Some expressions that Makkai defines as idioms are *blackmail*, *man-of-war*, *look up to,* and *Don't count your chickens before they're hatched*. Each of these may be, to cite Makkai, "erroneously decoded" (p. 44). In other words, the familiar elements combine in a way that does not result in a predictable meaning. It should also be noted here that the examples given above include a compound noun, a hyphenated compound noun, a phrasal verb plus preposition, and a proverb in the form of sentence; in other words, Makkai excludes single-morpheme items from his particular definition of *idiom*. Furthermore, because his theory is strictly stratificational, he places the upper structural limit of an idiom at sentence level.

Following Hockett (1958), then, an idiom is every isolated morpheme; in contrast, following Makkai (1969), an idiom is a complex (i.e., multimorphemic) lexical unit. These latter units acquire a particular status, in that the complete idiom has a given meaning that is not equal to, or entirely predictable from, the sum of the usual meaning of its parts. In this sense the literal meaning of the idiom usually has little or nothing to do with the idiomatic meaning. In fact, this is how collocations and stock phrases in SLA research have come to be known as *holophrases* (Corder, 1973), *prefabricated routines* and *patterns* (Hakuta, 1974), *formulaic speech* (Wong-Fillmore, 1976), *memorized sentences* and *lexicalized stems* (Pawley & Syder, 1983), *lexical phrases* (Nattinger & DeCarrico, 1992), *formulas* (Ellis, 1994), or *complex lexical units* (Arnaud & Savignon, 1997).

The vast literature on multimorphemic and multiword expressions provides different perspectives on idiomaticity. Such terms as *sayings, proverbs, allusions, similes, dead metaphors, social formulae* (also referred to as *phrasal formulas*) and *habitual fixed collocations* are not uncommon in the literature on the subject, although it must be noted that each of these terms has a somewhat different meaning. Several of these terms are included in the list of idioms in Strässler (1982, p. 15-16), who distinguishes between different perspectives on idiomaticity. Idiomaticity aside, the reader should note that several of the categories provided in Strässler's list (italics added) are not linguistically accurate, as noted in the corresponding endnotes:

> 1a. *sayings* (take the bull by the horns, let the cat out of the bag)
> 1b. *proverbs* (A bird in the hand is worth two in the bush; Half a loaf is better than none)
> 2. *phrasal verbs* (to give in, to take off, to get up, to look up)
> 3. *prepositional verbs* (to look after, to look for, to rely on, to object to)
> 4. *turnure [sic] idioms*[2] (to kick the bucket, to fly off the handle, come hell or high water)

5. *binomials*[3] (hammer and tongs, bags and baggage, spick and span)
6. *frozen similes* (as bold as brass, as cool as a cucumber, as white as snow)
7. *ungrammatical (according to prescriptive normative grammar), but generally accepted and widely used expressions*[4] (it's me, who did you see, to try and go)
8. *logical connective prepositional phrases* (for instance, in fact, on the other hand)
9. *phrasal compounds*[5] (White House, red herring, deadline)
10. *incorporating verb idioms* (to baby-sit, to sightsee)
11. *formula expressions* (at first sight, at least, how do you do, please (=if you please).

Given the blurriness that exists among these categories, it is highly doubtful that either linguistic scholars or idiomatologists would accept all of these categories as "idiomatic" (as Strässler himself points out). Moreover, such categories are of questionable use in coming to an understanding of the nature of idioms.

Although space prevents a comprehensive review of the various idiom types, it is nonetheless helpful to note briefly how scholars have studied and classified idioms in the past. To begin, Weinreich (1969), Fraser (1970), Makkai (1972), and Strässler (1982) focus on lexically and grammatically regular idioms while Smith (1925), Roberts (1944), and Fillmore, Kay, and O'Connor (1988) focus on the idiosyncratic idioms that demonstrate lexical and grammatical irregularities. Cowie and Mackin (1975) and Cowie, Mackin, and McCaig (1983) include both types in their idiom dictionaries. In light of these studies, idioms can be categorized according to (a) the morphemic, phrase, clause, or sentence patterns of which they are composed (Cowie & Mackin, 1975; Cowie et al., 1983), (b) their grammatical categories (Feare, 1980; Gaines, 1986), or (c) their themes (Broukal, 1994). A compilation of various idiom types along with illustrative examples can be found in Appendix A (Tables A1, A2, and A3).

Carter (1987, pp. 63-64), taking a different approach in identifying multiword expressions as idioms, introduces a three-scale categorization covering a plethora of multiword expressions. For the purpose of this discussion, an example (given in italics) follows each category: (a) collocational restriction, from unrestricted (*run a business, run a department, run a show,* etc.) to restricted (*pitch black*); (b) lexicogrammatical structure, from flexible (*break someone's heart*) to irregular (*the more the merrier*); and (c) semantic opacity, from transparent (*long time no see*) to opaque (overt: *OK*; covert: *kick the bucket*).

Similarly, Fernando (1996, pp. 32, 71-72), attempting to capture the degrees of variance in pure idioms, semi-idioms, literal idioms, and collocations (both restricted and unrestricted),[6] offers a twelve-scale categorization for the identification of multiword expressions as idioms. Again, examples follow each category: (a) invariant and non-literal (*spill the beans*), (b) invariant and literal (*be that as it*

may), (c) invariant and both literal and non-literal (*roll out the red carpet*), (d) variant and non-literal (*rain/pour cats and dogs*), (e) variant and both literal and non-literal (*a lone wolf/bird*), (f) invariant with a specialized subsense in one item (***catch*** *one's breath*), (g) variant (restricted) with a specialized subsense in one item (***keep*** *one's cool/temper*), (h) invariant and literal with specialized connotations (*first and foremost*), (i) variant (restricted) and literal (*to be exact/ precise*), (j) collocations: restricted and literal (*shrug one's shoulders*), (k) unrestricted with a specialized subsense (*catch a bus/tram/train/ferry/ plane/boat*, etc.), and, finally, (l) unrestricted and literal (*weak/strong/black/white/sweet/bitter/Turkish, etc. coffee*, etc.).

A much less complicated categorization, and perhaps more useful to the field of SLA, is provided by Moon (1997, pp. 44-47), who considers the elements of (a) institutionalization (i.e., the degree to which a holistic multiword item is conventionalized as a unit in a language community), (b) fixedness (i.e., the degree to which a holistic multiword item is frozen as a sequence of words), and (c) non-compositionality (i.e., the degree to which a holistic multiword item cannot be interpreted on a word-by-word basis) as those most relevant in her definition of the term *idiom*. In turn, these three criteria, as Moon states, are "not absolutes but variables, and they are present in differing degrees in each multi-word unit" (p. 44). Nevertheless, these criteria help distinguish holistic multiword units from other kinds of strings such as compounds (*armchair*, *wildflower*), phrasal verbs (*to look up*, *to hang out*), fixed phrases (*how do you do*, *dry as a bone*), and prefabs (*the point is*, *I'm a great believer in* ...). Consequently, Moon's criteria will prove to be a useful guide in ascertaining the degree of variability displayed by individual multiword units despite the fact that:

> [t]here are many different forms of multi-word item, and the fields of lexicology and idiomatology have generated an unruly collection of names for them, with confusing results... there is no generally agreed set of terms, definitions and categories in use (Moon, p. 43).

Moon's (1997) helpful categorization aside, SLA researchers and language teaching professionals wishing to investigate several of the idiom types given in Appendix A or by Makkai (1972), Fraser (1970), Cowie et al. (1983), Carter (1987), or Fernando (1996) would be hard pressed to state clearly the focus of idiom investigation without lapsing into unnecessary circular arguments regarding the scale of idiomaticity. As Fernando and Flavell (1981) correctly point out:

> ... idiomaticity is a phenomenon too complex to be defined in terms of a single property. Idiomaticity is best defined by multiple criteria, each criterion representing a single property. (p. 19)

To meet this challenge, I propose thr merging of several idiom types into one. This new category of idiom, encompassing multiple criteria, is presented in the next section.

What *Vivid Phrasal Idioms* Are and What They Are Not

As already stated at the outset of this article, the intent here is not to give a new definition of the term *idiom*, but instead to provide a concise working definition of the types of idioms that hold the greatest promise for SLA theory and pedagogy. In providing a working definition for what I call *vivid phrasal (VP) idioms*, I differentiate VP idioms from other types of idioms, without implying that VP idioms are more important than other idiom types. This categorization will inevitably involve some degree of crossover with other categories, since VP idioms, as indicated, are compilations of other types of idioms that share some very specific characteristics. This crossover will inadvertently contribute to the definitional blurriness that plagues idiom research. Nevertheless, this blurriness is necessary so that a clear definition of VP idiom can be offered, and so that a focus on such idiom types in future SLA research and practice can be justified.

Consider now the idioms that I have termed VP idioms: *pulling one's leg* (to fool someone with a humorous account of something; to get someone to accept a ridiculous story as true); *looking for a needle in a haystack* (to look for something that will be very hard to find); *sitting on pins and needles* (to be in a state of excitement and anxiety); *taking the bull by the horns* (to take definite action and not care about risk; to act bravely in a threatening situation); *letting the cat out of the bag* (revealing something that is supposed to be kept secret); *give him an inch, and he'll take a mile* (if you give someone a little of something, he or she will want more and more; some people are never satisfied); and *a bird in the hand is worth two in the bush* (one risks losing something by trying to get something greater). In past research, idioms of this sort have been variously called *sayings*, *proverbial idioms*, *sentence idioms*, *tournures* (from the French meaning "turns of phrase,") or *phraseological idioms*. Regardless of what it might be called, however, any idiom from the above list can be defined as an inseparable phrasal unit whose lexicalized, holistic meaning is not deducible from the individual meanings of its separate words.

VP idioms such as those listed above, however, are in fact a special subtype of phrasal unit. If any given phrasal unit—whether a verb or noun phrase; a nominal, adjectival, adverbial, or prepositional idiom; a saying; a tournure, proverbial or sentence idiom—is to be considered a VP idiom, then it must exemplify the following distinct characteristics:

(1) It is *not* a monomorphemic or polymorphemic expression such as *a pad*, *a flop*, *to splurge*, *to freeload*, *to rely on*, *to object to*, just as it must *not* be an ungrammatical expression, connective prepositional phrase, an incorporating verb idiom, or a social formula expression.

(2) It does *not* readily correlate with a given grammatical part of speech and

more often than not requires a paraphrase longer than a word.

(3) It is *not* decomposable; that is, its conventionalized figurative meaning cannot be readily derived from a linear compositional analysis of the familiar meanings of its separate words.

(4) It is easily visualized in the mind of the learner by evoking a powerful mental image; due to its concrete, "picturesque" (i.e., pictorial) meaning, it is thus *vivid*.

(5) It is a conventionalized complex multilexemic phrasal expression occurring *above word level* and usually of sentence length; hence it is *phrasal*.

(6) It is polysemous and has both a common literal, referential meaning and an institutionalized figurative, metaphorical meaning, with the latter meaning usually not predictable nor logically deducible from the grammatical, syntactic, structural, and semantic character of its individual constituent elements.

A vivid phrasal idiom, as defined here, combines powerful visual imagery (literal, referential semantic meaning) with a memorable, striking expression (nonliteral, metaphoric utterance meaning). Thus, each VP idiom can have two interpretations: a literal, concrete one and an abstract, figurative one. VP idioms are part of the poetry of daily discourse; they are the linguistic tools with which speakers of a language can both create new ways of conveying old meanings, and express fresh imaginative conceptions of the world. Since idioms by nature always mean more than the sum of the lexical items comprising them, the inherent semantic ambiguity present in all VP idioms presents a welcome challenge to those interested in bridging the gap between "what is said" and "what is ultimately communicated" on a particular occasion.

Given these criteria, VP idioms have little or nothing in common with "idioms" such as those listed at the beginning of this article. A separation of VP idioms from other idiom types along the distinct lines suggested here will no doubt lessen the degree of fuzziness afflicting so many idiom taxonomies of the past.

Vivid Phrasal Idioms and Second Language Acquisition

A more precise understanding of VP idioms in the context of second language acquisition can be attained through comprehension of three VP idiom subcategories. For the sake of illustration, VP idioms may be plotted on a *Lexical-Image Continuum* that includes a concept that I have labeled the *Conceptual-Semantic Image (CSI) distance*. The CSI distance denotes how close or how distant a target-language idiom is from its equivalent native-language idiom both *conceptually* (i.e., in terms of the picture it evokes) and *semantically* (i.e., in terms of the literal meanings of its words). The purpose of the continuum is not to provide a definite taxonomy; instead, its purpose is to aid exploration of the significance and implications of VP idioms for SLA research and idiom learning.

At one end of this Lexical-Image Continuum are target-language idioms that exhibit a one-to-one lexical and pictorial match with corresponding native-language idioms; the term *Lexical Level (LL) idioms* will be used to describe this

Table 1: Examples of Idiom Type

IDIOM TYPE	LANGUAGE	IDIOMATIC EXPRESSION	LITERAL TRANSLATION
Lexical Level (LL)	English	to look for a needle in a haystack	N/A
	Russian	iskat' igolku v stoge sena	to look for a needle in a haystack
	French	chercher une aiguille dans une botte de foin	to look for a needle in a haystack
	Spanish	buscar una aguja en un pajar	to look for a needle in a haystack
	German	eine Stecknadel im Heuhaufen suchen	to look for a pin in a haystack
Semi-Lexical Level (SLL)	English	to pull someone's leg	N/A
	Spanish	tomarle el pelo a uno	to pull someone's hair
Post-Lexical Level (PLL)	English	a drop in the bucket/ocean	N/A
	Spanish	como quitarle un pelo a un gato	like the losing (falling, shedding) of a hair of a cat
	German	Wie/nur ein Tropfen auf den/einen heißen Stein	like/only a drop (of water) on the/a hot stone
	Chinese	wu jì yu shì	no help upon matter
	Japanese	yakeishi ni mizu	water on a red-hot stone

type of idiom. At the other end of this continuum are target-language idioms that do not match native-language idioms either lexically or pictorially; these are called *Post-Lexical Level (PLL) idioms*. Somewhere in the middle of this continuum are target-language idioms which, although they exemplify to a large extent the one-to-one lexical and pictoral correspondence of LL idioms, may or may not use all the same individual words as native-language idioms and may differ by only a few or even just one word; these are referred to as *Semi-Lexical Level (SLL) idioms*. Table 1 presents examples from the three VP idiom subcategories described above.

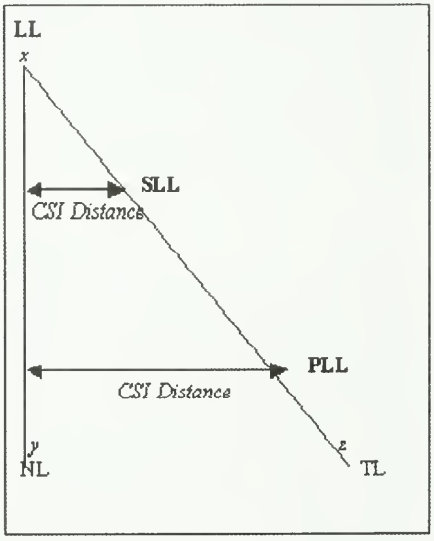
It should be clear from the examples given that while a target-language VP idiom like the German idiom *unter dem Pantoffel stehen* (*to be under someone's thumb*) may be an identical LL idiom in one language (e.g., Russian *byt' u kogo-libo pod bashmakom*), the same idiom may be an SLL idiom in another language (e.g. Spanish *estar bajo la férula de alguien*; literally, *to be under someone's stick*), and a PLL idiom in yet another language (e.g. French *c'est elle qui porte la culotte*; literally, *it's she who wears trousers*). Furthermore, a target-language VP idiom is considered to be an LL, SLL, or PLL idiom only in relation to the corresponding idiom in the learner's native language, and not in relation to idioms in any other language. This is important to note here because, more often than not, a target-language VP idiom may be a PLL idiom across several languages with respect to the learner's native language. In English you say *let the grass grow under*

Figure 1

LL Idioms—TL idiom is identical in concept, number and selection of lexemes, and in image to NL idiom. Meaning is comprehensible out of context. No context necessary.

SLL Idioms—TL idiom is similar in concept, but different in number or selection of key lexemes, and in image to NL idiom. Meaning may be comprehensible out of context. Context maybe necessary.

PLL Idioms—TL idiom is almost similar in concept, but is very different in number and selection of key lexemes, and in image to NL idiom. Meaning may or may not be comprehensible out of context and perhaps even in context. Context is increasingly necessary.



Target-language idioms and their category relation to native-language idioms. CSI Distance = Conceptual-Semantic Image distance; LL= Lexical Level; SLL= Semi-Lexical Level; PPL= Post-Lexical Level; TL= Target Language; NL=Native Language.

Table 2: Overview of VP Idioms and Their Classification Types

IDIOM	TYPE	LITERAL TRANSLATION	IDIOMATIC MEANING
Spanish			
dejar en alto y en seco	LL	to leave someone high and dry	to leave someone high and dry
él que le quede el guante que so lo plante	SLL	if the glove fits, wear it!	if the shoe fits, wear it!
subirse a la parra	PLL	to climb up the grapevine	to hit the ceiling
French			
avoir les yeux plus grands que le ventre	LL	to have eyes bigger than one's stomach	to have eyes bigger than one's stomach
être au bout du rouleau	SLL	to be at the end of the roll	to be at the end of one's rope
casser du sucre sur le dos de quelqu'un	PLL	to break sugar on someone's back	to talk about someone behind his or her back
German			
eine Schraube locker haben	LL	to have a screw loose	to have a screw loose
den Stein ins Rollen bringen	SLL	to get the stone rolling	to get the ball rolling
die Würmer aus der Nase ziehen	PLL	to pull the worms out of the nose	It is like pulling teeth from a mule
Greek			
váhzo ólla ta avgá sénna kaláthee	LL	I put all the eggs in one basket	to put all the eggs in one basket
metreeménna ínne ta psomyá too	SLL	loaves of bread are numbered	to have one's days numbered
too váhzo ta thyó póthya sénna papoótsee	PLL	I put his two feet into one shoe	to have someone wrapped around one's little finger

your feet, but in Russian you say *wait by the sea for the weather* (*zhdat' u moria pogody*), while in French you say *wait till the fried larks fall into your mouth* (*attendre que les alouettes vous tombent toutes roties*). In Spanish you say *expect an elm tree to yield pears* (*esperar que el olmo de péras*), and in German you are content to state the proverbial wisdom that *hope and continual expectations make one a fool* (*hoffen und harren macht manchen zum Narren*). Table 2 presents samples of idioms in each of the three VP idiom categories discussed here. For each idiom, the table lists its idiom type in relation to its English literal translation, and its idiomatic English meaning.

As shown in Figure 1, the CSI distance between target-language and native-language idioms determines into which class of VP idioms a particular target-language idiom will be classified. It can be represented as follows. In this representation of the Lexical-Image Continuum, the native-language idioms are plotted on the xy axis and the target-language idioms on the xz axis. Since LL target-language idioms are identical to native-language idioms, no CSI distance is observable. The distance increases, however, as one moves from LL to PLL idioms, where the distance is most pronounced. This fact is important because the CSI distance between a target-language and a native-language VP idiom, as will be shown subsequently, has been found to greatly affect the overall idiom comprehension and interpretation process during the reading of authentic texts.

Given the above observations, it is evident that much of our current knowledge base regarding matters of idiomaticity cannot be applied blindly to SLA contexts. The clear benefit of a categorization with three categories (identical, similar, and different idioms between the target language and native language) is that such categorization allows the precise investigation of these idiom types across several second or foreign languages, resulting in a number of testable hypotheses. By not collapsing all categories considered idiomatic under the umbrella term *idiom*, SLA researchers and language-teaching professionals can begin to study the same type of idioms under the same conditions of inquiry. Over time, several idiom types can be tested empirically (both quantitatively and qualitatively), thus making the picture of L2 idiom understanding ever more complete. Moreover, SLA researchers and language-teaching professionals can benefit from such a taxonomy because it provides a new vantage point from which to formulate predictions about the degree of difficulty experienced by second language learners during idiom comprehension and interpretation based on the CSI distance between target-language and native-language idioms discussed above. Based on the results of such focused investigations, recommendations for future idiom research and pedagogy can be advanced.

The three hypotheses presented next are a first attempt to provide answers to the puzzle of idiomaticity in the context of second language acquisition. Weinreich (1969) said it best when he wrote, "to a linguist that is preoccupied with productivity in the strongest, Chomskyan sense, idiomaticity represents a basic theoretical stumbling block" (p. 23).

SETTING THE PARAMETERS FOR THE LEXICAL-IMAGE CONTINUUM

The LL, SLL, and PLL Hypotheses

The following hypotheses arose from a two-year pilot study conducted during 1996-1998 with 35 third-, fourth-, and fifth-semester students of Modern Greek (Liontas 1997, 2001). Further empirical evidence for the validity of these hypotheses has been provided in Liontas (1999) for Spanish, French, and German. Taken together, the evidence provides a comprehensive framework for idiom understanding across several foreign languages. For the purposes of this discussion, the empirical evidence will follow the presentation of the three VP idiom hypotheses.

Lexical-Level (LL) Hypothesis. If a target (L2) idiomatic expression already exists in the learner's native (L1) language, the learner will attempt to assign meaning to the L2 expression by referring first to the available lexical entries in his or her L1 (or L3, L4, etc.) mental lexicon. Upon a one-to-one match between the L2 and L1 idiomatic expressions, the learner will then assign meaning to the L2 expression. In other words, the learner will make use of his bottom-up processing skills before assigning meaning to an L2 expression. Transfer of knowledge between L1 and L2 is strongly predicted. No contextual support is needed for the interpretation of such idioms.

Semi-Lexical Level (SLL) Hypothesis. If the L2 idiom is similar, but not identical to the corresponding idiom in the L1, then the learner will undergo the same processes as stated above with the addition that at least one or more lexical items, which may or may not be present in the L1 idiom, will have to be inferred. In other words, recognition of the L2 idiom would still be possible but should require additional processing effort due to the added inferencing. Some contextual support may be needed for the interpretation of such idioms.

Post-Lexical Level (PLL) Hypothesis. If an L2 expression does *not* exist in the learner's L1 language, or if it exists, but is embedded in lexical items that evoke a totally different thought or mental image, then the learner, after having accessed, found, and understood one or more of the lexical entries that make up the L2 idiom, will come to rely primarily on semantic, syntactic, and pragmatic contextual cues and will draw upon his or her own native idiomatic knowledge and previous language and sociocultural experiences before assigning a definite meaning to the L2 idiomatic expression. In other words, the learner will first make use of his or her bottom-up processing skills, and upon semantic hindrance or ambiguity, he or she will then attempt to use the larger discourse context (top-down processing) to interpret the existing target lexicon by solidifying the interpretation(s) of the L2 idiomatic expression based on the greater contextual and pragmatic framework in which that particular expression was used. Without contextual support, the interpretation of such idioms will be difficult.

The empirical evidence discussed in the remainder of this article provides an understanding of the processing mechanisms underlying the comprehension and interpretation process of VP idioms.

Empirical Evidence in Support of the LL, SLL, and PLL Hypotheses

Of specific relevance to the present hypotheses is the research by Irujo (1986, 1993) and Liontas (1997, 2001). Irujo (1986) conducted a study of transfer of native language training and/or interference in learning English idioms. Twelve Venezuelan students in an American university who were advanced learners of English as a second language formed the sample of this study. These subjects were presented with fifteen equivalent and commonly used English and Spanish idioms in four tests: recognition, comprehension, recall, and production. Statistical analysis of the results suggests that the subjects (a) were able to generalize from the idiom's meaning in Spanish to its meaning in English, even when the form was slightly different, and (b) could correctly produce many more identical idioms (i.e., LL idioms) than idioms of other types. Combined, these results were seen as an indication of positive transfer. As expected, the two production tests showed interference (negative transfer) occurring more for similar (i.e., SLL) than for totally different (i.e., PLL) idioms. In other words, idioms that are identical in the L1 and L2 are the easiest to comprehend and produce, followed by idioms that are partially similar in the L1 and L2. On the other hand, idioms that are completely different in both languages are the most difficult to comprehend and produce, and show little evidence of either positive or negative transfer. In addition, the results of this study reveal that advanced second language learners whose first language is closely related to the second can use knowledge of idioms in their first language to comprehend and produce idioms in the second. They do so by using target-language related strategies such as mixing idioms and providing an incomplete idiom. Irjuo suggests that language similarities may encourage interference and that idioms are not always nontransferable.

Irujo's (1993) study looked at advanced English learners' use or avoidance of English idioms. The goal in this study was to ascertain whether 12 fluent bilingual Spanish/English speakers who had learned English as a second language as adults (but whose conversation showed very few grammatical or lexical errors) would attempt to use English idioms in a translation task, or would instead avoid them by using non-idiomatic synonyms or paraphrases. The task given to the subjects was to translate passages containing idioms into everyday conversational English. Again, the results showed that the best-known English idioms were the ones with identical Spanish equivalents, and the least-known were those that were totally different in the two languages. Moreover, results confirmed the use of English knowledge more in the production of idioms that were identical in both languages than those that were different, those that were commonly used, or those that were semantically transparent. Given these results, Irujo concluded that semantic transparency appears not to be as important as similarity to a first-language idiom.

To examine the ways in which L2 learners process, comprehend, and interpret idiomatic expressions, Liontas (1997, 2001) tested 35 third-, fourth-, and fifth-semester students of Modern Greek over a two-year period (1996-1998). Subjects

were asked to provide interpretations for 46 matching idioms (LL idioms, identical in both languages) and non-matching idioms (PLL idioms, different in each language) taken from authentic texts of Modern Greek literature. Idioms were presented to the subjects in two experimental conditions: out of context and in context. In the latter condition, idioms were embedded in narrative or dialogic contexts 5 to 8 sentences in length. Results confirmed that idiom comprehension performance in Modern Greek significantly improved if contextual information was present for both idiom types.[7] In the non-context condition, analysis of data indicated idiom comprehension performance to be seriously impaired, especially for the non-matching PLL idioms, thus corroborating the earlier results found by Irujo (1986, 1993), Colombo (1993), and McGlone, Glucksberg, & Cacciari (1994).

Liontas's (1999) study expanded upon the two idiom types used in the previous study by introducing SLL idioms or similar idioms in both languages, and included 60 adult third-year university English-speaking foreign language learners. Thirty were students of Spanish, 15 of French, and 15 of German. Thirty identical (LL), similar (SLL), and different (PLL) idioms per language group (90 VP idioms total or 10 idioms per type) were used in experimental tasks of idiom detection (Idiom Detection Task), idiom isolation (Zero Context Task), and idiom processing in context (Full Context Task). In addition to identifying or interpreting the idioms, participants were asked to explain their choice by writing a brief report on the cognitive-psycholinguistic processes, reading strategies, and inferencing techniques that guided their selection, including a discussion of the difficulties of detecting the given VP idiom and how they attempted to resolve those difficulties. They were also instructed to report on the feelings they had experienced during the task. (For a sample of the tasks given to the subjects of this study, see Appendix B.)

This study involved repeated measures of data for each participant and included both quantitative and qualitative analyses of 30 computerized idiomatic texts from each language group. Each task had 15 idioms. There were 15 different idioms for the Idiom Detection Task and the Zero Context Task; the Full Context Task used the same 15 idioms as the Zero Context Task. A score of 2 was given for those idioms that were correctly detected (in the Idiom Detection Task) or defined and interpreted (in the Zero Context Task and Full Context Task), for a total potential score of 30 points for each task. A score of 1 was given for those idioms that were only partially detected, defined, and interpreted. Those idioms that were not detected, defined, and interpreted at all or contained no answer received a score of 0. In addition, latency data (i.e., the latency time between seeing an idiom on screen and the onset of typing, measured in seconds) were also measured in the Zero Context Task. Total idiom performance was calculated for each participant, for each VP idiom subtype, and for each language group.

Table 3 presents a summary of VP idiom data collected from all experimental tasks. In each experimental task, performance scores were calculated by dividing the actual number of points earned by the maximum number of points possible

Table 3: Summary of VP Idiom Data

IDIOM DETECTION	SPANISH	FRENCH	GERMAN	ALL LANGUAGES
LL	89.64	76.67	87.69	84.67
SLL	83.93	75.00	90.77	83.82
PLL	96.43	85.83	89.23	90.50
Group Total	90.00	79.17	89.23	86.33

ZERO CONTEXT	SPANISH	FRENCH	GERMAN	ALL LANGUAGES
LL	69.29	73.33	83.08	75.23
SLL	43.57	35.00	64.62	47.73
PLL	17.14	9.17	50.00	25.44
Group Total	43.33	39.17	65.90	49.46

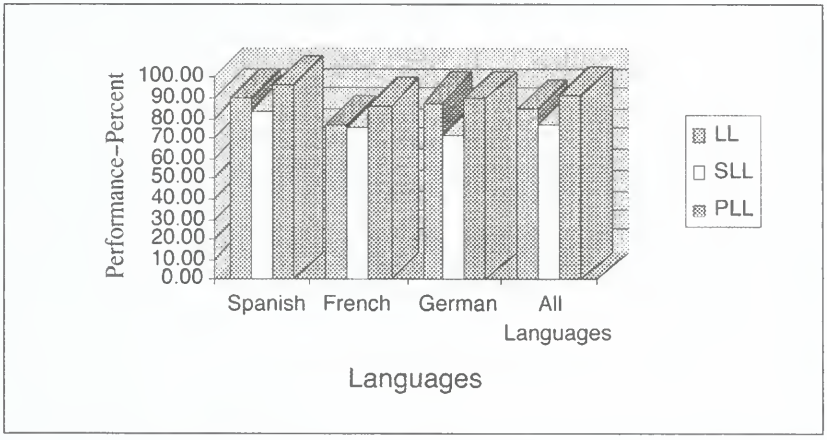
ZERO CONTEXT TASK TIME	SPANISH	FRENCH	GERMAN	ALL LANGUAGES
LL	25.08	28.49	31.81	28.46
SLL	36.78	36.15	32.96	35.30
PLL	38.14	35.36	35.23	36.24
Group Total	100.00	100.00	100.00	100.00

FULL CONTEXT	SPANISH	FRENCH	GERMAN	ALL LANGUAGES
LL	85.71	89.17	97.69	90.86
SLL	67.86	63.33	95.38	75.52
PLL	60.00	55.00	88.46	67.82
Group Total	71.19	69.17	93.85	78.07

in each of the three VP idiom types. All data are expressed in percentage terms representing performance scores for each task (i.e., the Idiom Detection Task, the Zero Context Task, and the Full Context Task) and the average percentage of time required to process each idiom type in the Zero Context Task (i.e., ZCT Time).[8]

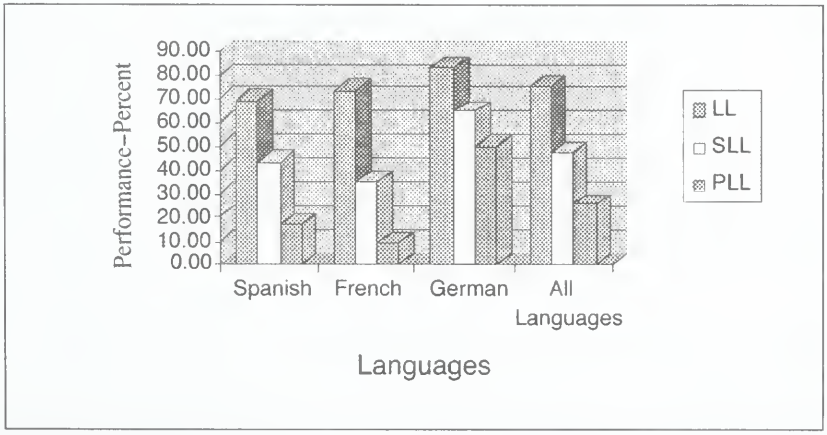
Columns in Table 3 identify the particular task under investigation, the individual languages investigated and, finally, the summary of data for all languages combined. Rows present the collective performance for each of the three subtypes of VP idioms across all languages and, finally, the row marked "Group Total" summarizes task performance for the languages as a whole. The final performance

Figure 2



Summary of Idiom Detection Task data. LL = Lexical Level; SLL = Semi-Lexical Level; PLL = Post-Lexical Level

Figure 3

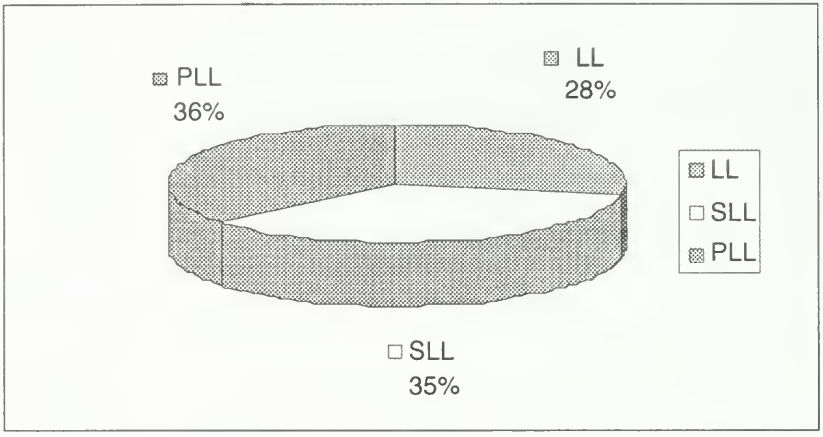


Summary of Zero Context Task data. LL = Lexical Level; SLL = Semi-Lexical Level; PLL = Post-Lexical Level

value is highlighted in bold print.

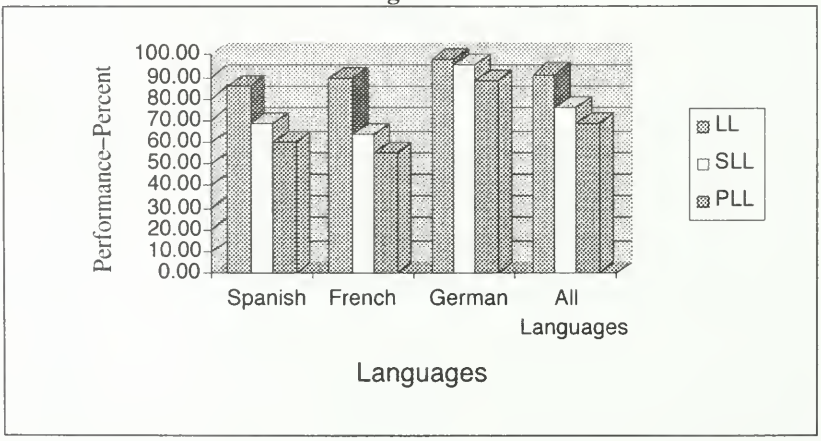
Statistical analysis (ANOVA and Tukey analyses)[9] of the results confirmed, first of all, that second language learners, regardless of target language studied, are quite capable of successfully detecting VP idioms in authentic texts (86.33% combined performance score for all languages) using a variety of contextual cues and reading strategies, including, but not limited to, word and idiom recognition, lexical access and retrieval, contextual and pragmatic support, background and world knowledge, formal schemata, and strategy use (see Idiom Detection Task data in Table 3 and Figure 2).

Figure 4



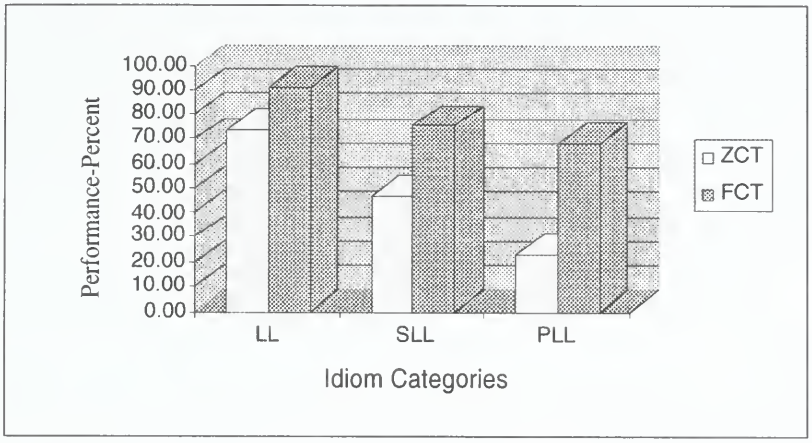
Summary of Zero Context Task time data. LL = Lexical Level; SLL = Semi-Lexical Level; PLL = Post-Lexical Level

Figure 5



Summary of Full Context Task data. LL = Lexical Level; SLL = Semi-Lexical Level; PLL = Post-Lexical Level

Figure 6



Increase in performance from Zero Context Task (ZCT) to Full Context Task (FCT). LL = Lexical Level; SLL = Semi-Lexical Level; PLL = Post-Lexical Level.

Second, in the absence of context, LL idioms (identical idioms between the native and target languages) are processed, comprehended, and interpreted more successfully (a combined performance score of 75.23% for all languages) than SLL (similar) idioms (47.73% for all languages) or PLL (different) idioms (25.44% for all languages). This result is consistent for all languages. (See the Zero Context Task data in Table 3 and Figure 3.)

Third, similar to the Zero Context Task idiom performance data above, in the absence of context LL idioms are processed more quickly (28.46% for all languages) than SLL idioms (35.30% for all languages) and PLL idioms (36.24% for all languages; see Zero Context Task Time data in Table 3 and Figure 4). Both the Zero Context Task idiom performance data and the Zero Context Task time data support the claim that in the absence of context, VP idiom type significantly affects the speed and ease of VP idiom understanding (i.e., the combined comprehension and interpretation process of idioms).

Finally increased context seems to have an effect on the comprehension and interpretation process of all VP idioms, especially those of the PLL type, with performance score of 90.86% for LL idioms, 75.52% for SLL idioms, and 67.82% for PLL idioms, totaling 78.07% for all languages combined (see the Full Context Task data in Table 3 and Figure 5).[10] The increase in idiom performance was most pronounced in the PLL category, followed by the SLL category, and the LL category (see Figure 6). Again, this result is consistent for all languages.

Taken as a whole, the increase in idiom performance from the Zero Context Task (49.46%) to the Full Context Task (78.07%) for the three languages combined indicates the facilitative effect that context has on overall VP idiom understanding. Combined, these results provide strong support for the findings of the other three studies already reported (Irujo, 1986, 1993; Liontas, 1997).

Moreover, a qualitative analysis of reading strategies reported by participants across the three experimental tasks reported here supports the notion that there is indeed a universal process of comprehending and interpreting VP idioms in foreign languages with respect to the languages investigated, and which was also found in my earlier study on Modern Greek (Liontas, 2001). Finally, the study revealed a strong agreement among learners on wanting idioms to be an integral part of their language and culture training within the context of meaningful authentic use.

Investigating VP Idiom Understanding in Second and Foreign Languages

The ways in which the idiomatic meaning of a VP idiom is computed are highlighted in the three hypotheses presented earlier. Underlying all of these hypotheses is the notion that, out of context, the difficulty of idiom understanding depends on an idiom's degree of markedness.[11] A target-language idiom is either unmarked (i.e., easy by way of lexical comparison of translation equivalents) or marked (i.e., difficult by way of lexical comparison of translation equivalents). Thus, LL idioms are unmarked (i.e., equivalent lexical items are present in both the target- and native- language idiom, evoking the same mental image) whereas SLL and PLL idioms are semi-marked and marked respectively (i.e., some or all of the lexical items are specific to a particular language and evoke different mental images).

In particular, the difference in lexical makeup of the idioms is an important indication of difficulty over the whole range of VP idioms. A learner will have the most difficulty understanding a given L2 idiom when there is no lexical/image similarity between it and any corresponding L1 idiom, whereas he or she will have less difficulty when there is a complete word-for-word correspondence of lexical items and images in the two languages, provided of course that the individual L2 lexical items comprising the idiom are known to the learner. The level of difference between an L1 and an L2 idiom, which corresponds to the degree of difficulty that the learner will have understanding the latter, is directly related to the degree of semantic/image distance between the target-language and native-language idiom.

In addition, it has been suggested that the degree of difficulty in understanding a target-language idiom may also be affected by how close the metaphoric meaning of the idiom is to the literal one. For example, the image created by the English idiom *to rain cats and dogs* bears no obvious relationship to its meaning *to rain heavily* and so would no doubt be difficult for learners to understand. But the corresponding idioms (they are actually similes) in Russian *dozhd' l'et kak iz vedra* (*rain pours as if from a bucket*), French *il pleut à seaux* (*it pours from pails*), Spanish *llover a cántaros* (*to rain from jugs*), and German *es gießt wie aus Kannen* (*it pours as if from jugs*) each create an image close to that of heavy rain and therefore would presumably be less difficult to interpret in context or even out of context.

However, quantitative evidence collected in the Liontas (1999) study suggests that when these idioms are presented in context, idiom interpretation pro-

ceeds uninfluenced by similarity or difference between metaphoric and literal meaning. Let us consider the same English idiom *to rain cats and dogs* with yet another corresponding idiom, in Spanish (*¡Caer chuzos de punta!*; literally, *to fall sharp-pointed spears*), and German (*es regnet junge Hunde*; literally, *it's raining young dogs*). In Liontas's study, most L2 learners pointed to the similarity and difference in lexical makeup and in the image being invoked between the target-language idiom given and the corresponding native language idiom *to rain cats and dogs*. While the concept of *to rain heavily* was clearly evident in the context in which these target-language idioms were embedded, a discussion of the differences in metaphoric and literal meaning was not pronounced in the learners' idiom interpretations. Lexemic and image similarity, however, were prominent.

This is not to suggest that lexical similarity is more important than metaphoric interpretability. It does suggest, however, that context may have a greater effect on idiom interpretation than differences between metaphorical and literal meaning, which explains why the Spanish and German idioms were accurately interpreted in context despite variations in lexemic composition and the distance between the metaphorical meaning and the literal one.

Specifically, in the case of the Spanish idiom, *¡Caer chuzos de punta!*, out-of-context performance failed to reach even 20% (17.86% to be precise). With the introduction of context, however, performance scores reached 67.86%. In the case of the German idiom, *es regnet junge Hunde*, the performance score level reached 100% in context from a 92.31% score out of context. Whereas the CSI distance from the German idiom *es regnet junge Hunde* to the English idiom *it's raining cats and dogs* is relatively small (the difference in this phrase is in fact only one key lexeme: *cats*), the Spanish idiom, *¡Caen chuzos de punta!*, evokes an image that is difficult to connect to an English idiom resembling this idiom's conceptualization. Hence the low success rate with this idiom's metaphoric interpretability out of context.

However, it is true that metaphoric interpretability, along with lexical similarity, familiarity, compositionality, predictability, and literality, are all relevant dimensions in the processing of both target-language and native-language idioms. For example, Titone (1994), testing 226 native speakers of English who were asked to rate the descriptive norms (i.e., degree of decomposability and analyzability) for 171 English idiomatic expressions, established that the dimension of predictability correlates significantly with alternative ratings of familiarity, whereas literality correlates negatively with abnormal decomposability or analyzability. This clearly suggests that the more easily an idiom is *decomposable*, the easier its figurative meaning can be attained. As Gibbs (1984) has stated, "When an idiom is decomposable, readers can assign independent meanings to its individual parts and will quickly recognize how these meaningful parts combine to form the overall figurative interpretation of the phrase" (p. 285).

It follows that when there is a one-to-one correspondence between the literal meaning stated (sentence meaning) and the figurative meaning implied (intended meaning), the degree of decomposability or analyzability exerts significant influ-

ence on idiom interpretation. Gibbs (1994) put forth a model—the *idiom decomposition model*—that accounts for these observations. According to this model (first proposed by Gibbs, Nayak, & Cutting, 1989), some idioms are more decomposable than others and are processed as any other phrase or sentence that is subjected to a full compositional analysis (i.e., graphophonic, syntactic, and semantic analysis). A similar position has also been advocated by Van de Voort & Vonk (1995), who suggested that:

> During processing people try to analyze an idiomatic expression compositionally, much like they analyze a literal expression. They try to assign independent idiomatic meanings to the individual parts of the idiom, which then can be combined to form the overall figurative interpretation of the phrase. This assumption implies that access to the meaning of an idiom is dependent on the extent to which an idiom can be compositionally analyzed; that is, meaning access is dependent on the compositionality of an idiom. (p.284)

Unfortunately, not all idioms are decomposable, and in such cases no analysis of the grammatical structure of the phrase, the accessing, retrieval, and comprehension of its individual lexemes, or the semantic analysis of the entire phrase can offer clues for the computation of the figurative meaning.

Given the above, it is clear that the CSI distance between target-language and native-language idioms advanced here provides only a basis for making *predictions* about the degree of difficulty experienced by learners and does not, in itself, provide *explanations* for this difficulty. What can be stated with confidence, however, is that difficulties in idiom comprehension and interpretation can be predicted on the basis of the differences found in the CSI distance between target-language and native-language idioms: The greater the distance, the more difficult the understanding of a particular target-language VP idiom subtype. As seen in Table 3 above, understanding of VP idioms was most challenging in the PLL subtype across all languages (both out of context and in context). The learner's native language and knowledge of idioms in the native language will be the major determinants of the degree of difficulty experienced during the comprehension and interpretation of a target-language idiom. Consequently, the difficulty that a second or foreign language learner will have comprehending and interpreting a given target-language VP idiom, especially when given without contextual support, can be predicted by comparing the lexical similarity and metaphoric interpretability of the target-language and native-language idioms in question (i.e., the CSI distance between them), although it must be noted that contextual support would be used by the learner in real-world circumstances. Even in context, however, the predictions below hold true:

(1) A target-language idiom that is unmarked (i.e., an LL idiom) will not be difficult to understand;

(2) A target-language idiom that differs from the corresponding native-language idiom but that is semi-marked (i.e., an SLL idiom) will be less difficult to understand than one that is more marked (i.e., a PLL idiom);
(3) A target-language idiom that both differs from the corresponding native-language idiom and is marked (i.e., a PLL idiom) will be the most difficult to understand;
(4) The degree of difficulty associated with the comprehension and interpretation of a target-language idiom corresponds to the CSI distance between it and its corresponding native-language idiom. Regardless of VP idiom type, however, a major determinant of difficulty is knowledge of vocabulary (i.e., inferring the meaning of vocabulary from grammatical and situational knowledge) and one's own idiomatic competence in the native language.

The markedness factor, as used here, explains not only when differences between target-language and native-language idioms will result in comprehension and interpretation difficulties, but also the relative degree of difficulty that a learner will likely experience in a given situation. Nevertheless, it is wise to exercise caution about equating "translatability" with "difficulty" or "distance" between the native and the target language. The actual distance between a target-language and a native-language idiom merely acts as a constraint on idiomatic knowledge transfer: The starting point for the comprehension and interpretation of a target-language idiom is the learner's knowledge of his or her L1. Specifically, if the learner is not familiar with a particular idiom in his or her native language, the lexical items of the target-language idiom risk remaining enigmatic, and the image to be evoked by the idiom risks losing potential associations or connections in the learner's mind. Any resulting interpretations will be speculative at best; they will therefore require the renewed development of idiomatic associations, connections, and interpretations when presented with supporting context.

An important issue for language pedagogy, therefore, is whether second language learners need to be taught LL idioms, or if they can be expected to transfer them from their L1 in the absence of contextual support. As already reported in the two studies by Irujo (1986, 1993), those idioms that are identical in the L1 and L2 are the easiest to transfer. The validity of this finding notwithstanding, learners of second and foreign languages should be told that idiom meanings are the same in both languages in cases where the target-language idiom falls into the LL category.

The LL, SLL, and PLL hypotheses offered above have descriptive, explanatory, and predictive power, for reasons already discussed. A word of caution is in order, however: Such theories must not be considered in isolation from discourse features. In other words, one cannot hope to formulate meaningful conclusions about the efficacy of these hypotheses by studying VP idioms apart from the contexts that support their meaning. These theories do provide a basis for predicting difficulties in understanding VP idioms, but only when such idioms are also pre-

Table 4: "If/Then" Statements For L2 VP Idioms

LL IDIOMS		
IF...	**THEN...**	**EVIDENCE**
the individual lexemes of an idiom are known and the idiom is an LL idiom,	recognition of idiomatic meaning will be immediate.	"To let the cat out of the bag—It is the same as the English expression." (G4: *die Katze aus dem Sack lassen*; lit. *to let the cat out of the bag*)
the individual lexemes of an idiom are not known and the idiom is an LL idiom,	guessing will be entertained.	"This is a total guess. I have no idea." (S13: *faltarle a uno un tornillo*; lit. *to lack a screw*; English: *to have a screw missing*)
a key lexeme of an idiom is known and the idiom is an LL idiom,	L1 idioms containing the key word will be recalled from memory.	"The literal meaning doesn't help at all!, lost until the shirt, lost in the sauce?" (S4: *perder hasta la camisa*; lit. *to lose [everything] except the shirt*; English *to lose one's shirt*)
two key lexemes of an idiom are known and the idiom is an LL idiom,	L1 idioms containing the two key words will be recalled from memory.	"I used cuernos y toro as clues and made up the rest." (S10: *agarrar al torro por los cuernos*; lit. *to take the bull by the horns*)

Table 4: "If/Then" Statements For L2 VP Idioms (Continued)

SLL IDIOMS		
IF...	**THEN...**	**EVIDENCE**
the individual lexemes of an idiom are known and the idiom is an SLL idiom,	recognition of idiomatic meaning will be delayed.	"Don't know. Oh! It's raining cats and dogs? The only thing I can think of." (G14: *es regnet junge Hunde*; lit. *It is raining young dogs*; English *it's raining cats and dogs*)
the individual lexemes of an idiom are not known and the idiom is an SLL idiom,	guessing will be entertained.	"I'm thinking that it's like "adding grease to the fire" sounds good... [sic] where are the answers to these?" (S8: *echar leña al fuego*; lit. *to throw wood on the fire*; English *to add fuel to the fire*)
a key lexeme of an idiom is known and the idiom is an SLL idiom,	L1 idioms containing the key word will be recalled from memory, followed by a comparison/contrast of NL with TL idioms.	"To bite the bullet —biting something unpleasant which led me to biting, then I thought about what idioms use biting and I got biting the bullet." (G8: *in den sauren Apfel beißen*; lit. *To bite into a sour apple*; English *to bite the bullet*)
two key lexemes of an idiom are known and the idiom is a SLL idiom,	L1 idioms containing the two key words will be recalled from memory, followed by a comparison/ contrast of NL with TL idioms.	"I believe this is to throw fat in the fire, which means to do something to heat up a situation that is already tense. I don't know what lena is but I know throw and fire, so I guessed. (S8: *echar leña al fuego*; lit. *to throw wood on the fire*; English *to add fuel to the fire*)

Table 4: "If/Then" Statements For L2 VP Idioms (Continued)

PLL IDIOMS		
IF...	**THEN...**	**EVIDENCE**
the individual lexemes of an idiom are known and the idiom is a PLL idiom,	recognition of idiomatic meaning is questionable due to the infinite possibilities.	"They are looking for hairs on the egg? I am stumped." (S12: *buscarle pelos al huevo*; lit *to look for hair on the egg*; English *to nitpick, to find fault with everything*)
the individual lexemes of an idiom are not known and the idiom is a PLL idiom,	complete guessing will take place, similar to "wandering around in the dark."	"I don't know. I'm feeling frustrated now, because I've done so many already and I'm not getting any of them." (S9: *sacar las castañas del fuego a alguien*; lit *to pull chestnuts out of the fire for someone*; English *to save someone's neck*)
a key lexeme of an idiom is known and the idiom is a PLL idiom,	guessing will be more refined based on the image the key lexeme evokes in memory.	"I am kind of taking a wild guess on this one only because of the word carne." (S3: *poner toda la carne en el asador*; lit *to put all the meat on the spit*; English *to put all your eggs in one basket*)
two key lexemes of an idiom are known and the idiom is a PLL idiom,	guessing will be more strictly refined to the images the key lexemes evoke in memory, either individually or in combination.	"They were looking for the hair on the egg. They were looking for a needle in a haystack. I guessed because there is no hair on an egg, one would look forever to find hair on an egg as would one looking for a needle in a haystack. I again used word clues." (S12: *buscarle pelos al huevo*; lit *to look for hair on the egg*; English *to nitpick, to find fault with everything*)

sented in context.

In sum, the *sine qua non* of the above hypotheses is that VP idiom understanding depends on an idiom's degree of markedness (i.e., the CSI distance between target-language and native-language idioms), a fact that makes target-language and native-language idioms amenable to crosslinguistic comparison. By analyzing samples of the world's idioms collected experimentally, implicational universals taking the form of "if/then" statements can be postulated. Table 4 presents the most compelling "if/then" statements for each of the three VP idiom types discussed thus far in this article, as these statements are based on real data (tendencies), and are not just hypotheses.[12]

The markedness factors discussed (and summarized in Table 4) have been shown to hold constant both statistically and qualitatively (Liontas, 1999, p. 252 and p. 298) across Spanish, French, and German, yielding the following mathematical relationship, (i.e., that LL idioms are processed faster and are interpreted more easily than SLL idioms which, in turn, are processed faster and interpreted more easily than PLL idioms):

$$\mathbf{LL > SLL} \text{ and } \mathbf{SLL > PLL} \rightarrow \mathbf{LL > PLL}$$

or

$$\mathbf{LL > SLL > PLL} \rightarrow \mathbf{LL > PLL}$$

This relationship may well be of considerable importance for future SLA research and practice since it was ascertained both with and without contextual support for VP idiom understanding (see Table 3 and Figures 3-5). However, there remains the question of whether this relationship holds across second and foreign languages other than Spanish, French, and German (and also Modern Greek in the Liontas [1997, 2001] study).

CONCLUSION

Recommendations for Future Idiom Research

This article began with a discussion of the ill-defined term *idiom* and the problems that arise because of lack of clarity regarding what exactly is meant by the term. Following a critical review of definitions of *idiom* applied by different idiomatologists and scholars, I then suggested a new category of idioms with respect to the acquisition of second languages, which I have termed *vivid phrasal (VP) idioms*. The nature of VP idiom classification along a conceptual Lexical-Image Continuum was then presented, including descriptions of what VP idioms are and what they are not. The ensuing discussion showed that while there still exist various means of categorizing idioms, agreement among idiomatologists regarding the definition of *idiom* can be reached and, even more importantly, a common research agenda for SLA researchers and language teachers alike is possible.

One way in which diverging definitions of *idiom* can be harmonized is through

researchers and language teachers investigating the same types of idioms under the same conditions. By studying the same types of idioms under the same conditions of inquiry, the SLA profession can contribute to an open yet focused discussion that will greatly enhance present knowledge of idiomaticity, especially with regard to second and foreign languages, where research is almost nonexistent in either theoretical or methodological publications. Indeed, after more than 25 years of intensive research dealing with a wide variety of SLA issues—from defining second language acquisition to assessing language ability in the classroom—idioms have not yet received the linguistic and pragmatic attention that they so clearly require. For example, in two of the most widely-used textbooks on SLA for graduate study—*The Study of Second Language Acquisition* by Rod Ellis (1994) and *Linguistics and Second Language Acquisition* by Vivian Cook (1993)—which together total over eleven hundred pages, the subject of idiomaticity does not even appear in their glossaries nor in their subject indexes.

A second way in which problems stemming from differing definitions of *idiom* can be ameliorated is to adopt a taxonomy such as the taxonomy for VP idioms presented in this article. Regardless of which second or foreign language is the focus of investigation, the subcategorization of VP idioms into Lexical Level (LL), Semi-Lexical Level (SLL), and Post-Lexical Level (PLL) idioms can provide a common point of departure for further L2 idiom study. A common research agenda can be established in the years ahead by designing research studies that investigate the applicability of the main hypotheses posited by L1 researchers regarding the processing, comprehension, and interpretation of idioms—Bobrow and Bell's (1973) *literal first hypothesis*, Swinney and Cutler's (1979) *simultaneous processing hypothesis*, Gibbs' (1980) *figurative first hypothesis*, Gibbs' (1994, 1995) *idiom decomposition model*, and Giora and Fein's (1999) *graded salience hypothesis*—in L2 learning situations..

The results of such studies can then be compared and contrasted with propositions advanced in L2 models of idiom processing, such as those in the *SL Comprehension and Interpretation Model of VP Idioms* proposed by Liontas (1999, pp. 377-389). This model, termed the *Idiom Diffusion Model*, is different from the L1 models cited above in that it does not predict the computation of the literal meaning over the idiomatic meaning, as is the case with the literal first hypothesis (also known as the *idiom list hypothesis*, Bobrow & Bell, 1973), nor does it predict the computation of the idiomatic meaning over the literal meaning, as is the case with the figurative first or *direct access hypothesis* (Gibbs, 1980). Further, the Idiom Diffusion Model does not claim that both meanings are simultaneously computed in parallel by a single phrase processor when the first word of an idiom string is encountered, as in Swinney and Cutler's (1979) simultaneous processing hypothesis (also referred to as the *lexical representation model*) or that lexicalized meanings are retrieved directly from the mental lexicon rather than from the context, as Giora and Fein's (1999) graded salience hypothesis puts forth.

The fundamental difference between the L1 models described here and the Idiom Diffusion Model lies in the fact that most L2 learners do not have access to

fixed institutionalized idiomatic expressions, as do L1 learners. For L2 learners, it is not a question of which meaning to access and retrieve first—the literal or the figurative—or whether both meanings are computed simultaneously. It is, instead, a question of whether or not they can sense a phrasal unit to be an idiom. This sense is activated anew every time a reader comes across a fixed group of words that do not make much sense if taken literally. The fact that the literal meaning precedes the figurative meaning (as clearly evidenced in Liontas 1997, 1999, 2001) should not be taken to confirm Bobrow and Bell's (1973) *literal first hypothesis,* as L2 learners cannot possibly access an idiom string that they do not possess from their mental lexicon. In contrast to L1 learners, L2 learners must create a new idiomatic meaning in their mind and juxtapose that meaning against one from their native language. It is through comparison and contrast that the L2 idiomatic meaning is created (in many cases for the very first time) in parallel to the text the learner reads. Based on the learner's personal background and world knowledge, and his or her familiarity with L1 idioms, mental connections between L1 and L2 idioms are established.

These connections are only as strong as the textual framework in which the L2 idiom is embedded allows them to be. At times, L2 learners, influenced by the lexemic make-up of an idiomatic string, make the wrong connections in their mind and, convinced of the accuracy of their connection, proceed with an interpretation even though the context supports another interpretation. At other times, L2 learners adapt, assimilate, or accommodate L1 idioms bearing close resemblance to L2 idioms and make them fit the context. At still other times they find themselves unable to make any connections between an L2 idiom and an L1 idiom from their mental lexicon. It is in such instances that frustration sets in for some learners. For the majority of L2 learners, however, context becomes the vehicle by which VP idiom understanding is ultimately achieved. The difference in overall idiom performance (and across idiom types) from the Zero Context Task to the Full Context Task offers support to this finding (see Table 3), and participants' (meta)cognitive comments lend further support. Consider the following representative comments:

> I figured out most of the idioms once the context was given. Without it, my direct translations tended to come up with something close to the right answer but not quite. Also, it helped me to run through a list of idioms in my head. Still, a few of the German idioms I missed totally. But now having seen them, I will recognize them in the future.
>
> The in-context part was very helpful. Once I understood the situation, it was easier to understand the idiom.
>
> I did not know all the vocabulary in the idioms. The context helped me to figure out what the idiom meant.

> In the Full Context Task, I was not familiar with these [idioms] so the text did help to interpret the idioms. The context also enabled a better understanding of these idioms, which was for my own benefit.
>
> [Idioms] are fairly easy when they are in the Full Context [Task] because I used the story to give me a hint.

Above all, the few representative comments given here make clear the important role that context plays in VP idiom understanding, especially in the comprehension and interpretation of PLL idioms. (For a more comprehensive review of such comments, see Liontas, 1999, pp. 263-264, 311-312, 343-344, and 566-569.)

The clear advantage of having a common research agenda is that focused investigations of the sort envisaged here can pave the way for idiom research and theory that avoids the confusion present in the L1 psycholinguistic models mentioned above. Even more importantly, such focused investigations can examine critically how second and foreign language learners in particular transact idiomatic meaning in and out of context. The three hypotheses—the LL, SLL, and PLL Hypotheses—and the empirical evidence in support of these hypotheses presented in this article provide a descriptive, explanatory, and predictive framework for investigating VP idiom understanding in a variety of experimental conditions. As a result, the SLA profession can reach a more coherent body of conclusions on the nature of VP idiom comprehension and interpretation in second and foreign languages, and advance theoretical arguments in favor of specific pedagogical practices that will assure second and foreign language learners' development of idiomatic competence.

Pedagogical Implications

To date, while the precise conditions that are most likely to facilitate the development of idiomatic competence in second and foreign languages remain largely unknown and will doubtless be the subject of future investigation, it can be stated with confidence that repeated and systematic exposure to frequent and useful idioms and the contexts in which they are used positively influences idiom learning. In addition, focused, meaning-based activities and training in receptive/interpretative strategies focusing on how native speakers and hearers share their linguistic (i.e., grammar, morphology, syntax), semantic (i.e., lexicon and etymology), and pragmatic (i.e., cultural beliefs about how language is used in communication) knowledge without lapsing into unnecessary ambiguity can be useful. Such activities can help second and foreign language learners discover the interplay between the context-independent linguistic knowledge expressed (i.e., what is said literally) and context-dependent extralinguistic knowledge implied (i.e., what is being communicated figuratively), in short, how speakers and hearers observe the rules that govern extended discourse against the background of shared knowledge—namely, cultural, social, and historical beliefs—among speakers from the

same linguistic and cultural community. Authentic materials (both print and audio) from the target culture can exemplify the rhetorical conventions of idiom usage and practices, including the social and cultural matters of idiomaticity such as occasion, purpose, and means.

Consequently, the discovery of the relationship between the idiomatic utterances used and the propositions asserted from one conversational turn to the next is key to rendering idiomatic interpretations successfully. Coupled with specific idiom teaching practices promoting idiom understanding, acquisition, and production, authentic texts from a range of media (e.g., the Internet, newspapers, magazines, movies, recordings, and the like) depicting real-life use of idioms or plays on idiomatic knowledge (a common feature in advertising language) can hasten the development, and ultimately the attainment, of idiomatic competence within contextualized environments both in the reception (listening and reading) and production (speaking and writing) of idiomatic language. The proposals in this paper regarding vivid phrasal idioms and the Lexical-Image Continuum are a first step in that direction.

APPENDIX A: IDIOM TYPES

Table A1: Clause, Phrase, and Sentence Idioms

TYPE OF IDIOM	EXAMPLE
Clause Patterns	
Verb + Complement	go berserk
Verb + Direct Object	ease somebody's conscience/mind
Verb + Direct Object + Complement	paint the town red
Verb + Indirect Object + Direct Object	do somebody credit
Phrase Patterns	
Noun Phrase	a crashing bore
Adjective Phrase	free with one's money
Prepositional Phrase	in the nick of time
Adverbial Phrase	as often as not
Sentence Patterns	
	one swallow does not make a summer
	give somebody an inch and he'll take a mile

Table A2: Grammatical Categories of Idioms

TYPE OF IDIOM	EXAMPLE
Noun Idioms	
a) Simple Nouns	a pad, a flop
b) Modified Nouns	eager beaver, backseat driver
c) Noun Phrases	apple of my eye, short end of the stick
Verb Idioms	
a) One-word Verbs	splurge, freeload
b) Two-word Verbs	rip off, count on
c) Verb Phrases	throw in the towel, face the music
Intransitive Verbal Idioms	
a) Intransitive Verbs with Particles	die down, come about, break down, settle down
b) Intransitive Verbs with Prepositions	believe in, run over, turn into, get over, part with
c) Intransitive Verbs with Particles and Prepositions	put up with, do away with, look forward to, look back on
Transitive Verbal Idioms	
a) Transitive Verbs with Movable Particles	make up, call off, look up, point out, talk over
b) Transitive Verbs with Prepositions	hold against, pull through, lose track of, play by ear
c) Transitive Verbs with Particles and Prepositions	bring around to, let in on, set aside for, talk over with
Nominal, Adjectival, and Adverbial Idioms	
a) Nominal Forms: Pairs of Nouns	flesh and blood, heart and soul, wear and tear
b) Nominal Forms: Adjective + Noun Combinations	last straw, close call, hot air, big shot, white lie, old hand
c) Adjectival Forms: Pairs of Adjectives	cut and dried, fair and square, touch and go
d) Adjectival Forms: Various Compounds	clear-cut, easy-going, man-to-man, level-headed
e) Various Adverbial Forms	time and again, for good, for now, high and low

Table A2: Grammatical Categories of Idioms (Continued)

TYPE OF IDIOM	EXAMPLE
Adjective Idioms	cool, swamped, gung-ho, half-baked
Adverb Idioms	on easy street, in a nutshell, once in a blue moon
Sentence Idioms	the coast is clear, let bygones be bygones

Table A3: Theme Idioms

THEME	EXAMPLE
Color	out of the blue, red tape, in the red, green light
Food	in a pickle, going bananas, a piece of cake
Numbers	in seventh heaven, forty winks, first sight
Parts of the Body	big mouth, sweet tooth, by heart, eye to eye
People	the real McCoy, a wise guy, go Dutch
Animals	blind as a bat, bookworm, smell a rat, chicken
Geography	over the hill, down-to-earth, tip of the iceberg
Recreation	a good sport, on the ball, no dice, off base
Household Items and Tools	a wet blanket, sharp as a tack, pins and needles
Medicine	a bitter pill, to hold one's breath, to have a lot of nerve
Plants	a bed of roses, a nutshell, up a tree, the last straw
Clothes	dressed to kill, hot under the collar, on a shoestring
Time	high time, kill time, call it a day, in no time
Weather	break the ice, a breeze, rain cats and dogs
House (inside/outside)	on the fence, under the table, down the drain
Repetition	fuddy-duddy, tip-top, wishy-washy

APPENDIX B: EXPERIMENTAL TASKS

The experimental tasks (Liontas, 1999) were described to the participants as follows:

Idiom Detection Task (IDT): You will be given a total of 15 short texts containing idiomatic expressions. Using the mouse, highlight the phrase you believe is the idiomatic expression. Then report on the specific processes and strategies you used in "locating" this phrase. Also report on your feelings during the task, any difficulties you had, how you overcame potential difficulties, and anything else you think might be important to report. The *Idiom Detection Task* is designed to challenge your overall comprehension process and to determine which text cues, learning strategies or reading techniques you employed for making sense of the idiom in general and its interpretation in particular.

Zero Context Task (ZCT): You will be given a total of 15 idioms without any supporting context. You are asked to guess their meanings. On your screen you will see one idiom at a time. Since this is a speed test, as soon as you believe you know the meaning of the idiom or a paraphrase, press any key on your keyboard and type the meaning in English. If you are unsure of the "equivalent expression," offer a paraphrase or describe the meaning as best you can in your own words. After completion, please report on the specific processes and strategies you used in "accessing" the meaning of the phrase given. Also report on the feelings you experienced during the task, any difficulties you had, and anything else you think might be important to report. The *Zero Context Task* is designed to determine how the "idiom in isolation" has challenged your overall comprehension process and what images you created or thought of to interpret each idiom.

Full Context Task (FCT): You will be given the same 15 idioms as in the previous *Zero Context Task*, but this time you may take as much time as needed. The idioms will appear in bold one at a time on your screen, and each will be given in its broader context. Read the text carefully, and when you feel ready to interpret the idiom, press any key on your keyboard and type the meaning in English. If you cannot infer the meaning, please speculate on the most plausible possibility based on the overall context. After completion, please report on the specific processes and reading strategies you used in "accessing" the meaning of the phrase given. Also report on the feelings you had, and anything else you think might be important to report. The *Full Context Task* is designed to find out how the "idiom in context" helped your overall comprehension, whether syntax and word meaning played a role in your understanding, and what images, if any, you created or thought of during this task. It is also important to know whether the meaning/image you had during the *Zero Context Task* has changed, along with your best explanation as to why or why not. Finally, in the space marked **Eureka**, offer the best equivalent English idiom. Even if the idiom is the same one offered above, please retype your answer here as well.

NOTES

[1] This definition of idiom has been cited by many scholars (Fernando, 1996; Fraser, 1970; Healey, 1968; Katz & Postal, 1963; Makkai, 1972; Partridge, 1935; Smith, 1925; Strässler, 1982) as it also encompasses a great variety of multiword expressions that exemplify idiomaticity, such as pure idioms, semi-idioms, and literal idioms, as well as habitual restricted and unrestricted collocations (see also Footnote 5 below).

[2] Actually, *tournures* (from the French meaning "turns of phrase").

[3] These are really conjuncts, not "binomials." Nom = noun (e.g., nominalizations), but *spick and span* are adjectives. It is suggested that in an "X and X" expression, the X can be any part of speech.

[4] This is a very questionable idiom category. English grammar is undergoing change in these cases.

[5] This idiom category is best described as "lexical" compounds, not "phrasal," as the examples given

are not phrasal in the grammatical sense.

[6] As Fernando (1996) uses them, these categories refer to the semantics of idioms, i.e., *pure idioms* are completely non-literal, whereas *semi-idioms* are only partly so. *Collocations*, on the other hand, exemplify fixed habitual recurrence of words in groups in a specific order and lexical form that conform to grammatical and semantic usage, as in *in the-not-too-distant future*.

[7] With the introduction of context, accuracy in LL idiom interpretation increased from 90.42% to 100% (a 9.58% increase) and from 40% to 72.85% (a 32.85% increase) for the PLL idioms, thus clearly suggesting that context affects understanding of PLL idioms.

[8] This average was calculated by dividing the total latency time for each idiom type (LL, SLL, PLL) by the total time spent on all 15 idioms. For example, the figure for LL Spanish idioms (25.08%) was calculated by dividing the total latency time for all participants for LL Spanish idioms (1594 seconds) by the total latency time spent on all the Spanish idioms (6356 seconds).

[9] For a full account of the statistical analyses performed on these data, see Liontas (2002a, 2002b, 2003).

[10] While using the same idioms for the Zero Context Task and the subsequent Full Context Task kept the idioms constant, it introduced the danger that improvement on the Full Context Task was partly due to prior exposure to the idioms. The lack of time pressure in the Full Context Task might also have contributed to performance. However, this should not have affected the difference in performance on the different types of idioms, which is the main focus of the present study.

[11] The term *markedness*, unlike the common definition given in linguistics as a linguistic structure that is "special" or "less natural" in some way than others during L2 acquisition, refers here to the idea that some L2 idioms are transferred more easily than others and that the learner's L1 can also facilitate L2 idiom learning. For example, the German idiom *das Kriegsbeil begraben* (literally, *to bury the hatchet*) is transferred more easily than the German idiom *die Würmer aus der Nase ziehen* (literally *to pull the worms out of the nose*) because the latter is more marked (i.e., different in lexemic makeup and highly metaphorical) in relation to its L1 English equivalent *to pull teeth from a mule*, leading to sampling of hypotheses and testing them out against the available input by means of inductive and/or deductive inferencing.

[12] Given space constraints, the evidence provided in Table 4 comes solely from the Zero Context Task experiment, which indicates how adult third-year university learners of foreign languages process, comprehend, and interpret VP idioms out of context. The evidence becomes even stronger as soon as one consults the retrospective comments made during the completion of the Full Context Task. For a list of such Full Context Task comments, see Liontas (1999, p. 311-312 and 560-563). The entry given in parentheses at the end of a retrospective comment indicates the target language and the VP idiom in question. A complete list of all 90 VP idioms used in the three experiments—Idiom Detection Task, Zero Context Task, and Full Context Task—can be found in Liontas (1999, p. 126-129).

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John I. Liontas (Ph.D., Second Language Acquisition and Teaching and Program Administration, University of Arizona) is Assistant Professor of German and Director of the German Language Program at the University of Notre Dame, performing research and development in second language teaching methodology, figurative competence, pragmatics, curriculum and program design, and multimedia-based learning. He has a long-standing interest in idiomaticity and in its application in the second language classroom. He is presently involved in the design and production of a multimedia computer software for learning idioms called *That's All Greek to Me!* He has published textbooks and articles in the area of curriculum design and development, on writing and reading, on idiomaticity, on technology-based language instruction, and on interactive games and game approaches. E-mail: jliontas@nd.edu

Language as Social Action: Social Psychology and Language Use by Thomas M. Holtgraves. Mahwah, NJ: Erlbaum, 2002,xii+232 pp.

Reviewed by Santoi Leung
Teachers College, Columbia University

Given the diversity and number of disciplines that take an interest in the social aspects of language use, providing an interdisciplinary perspective on this topic would be a challenging prospect for many scholars. Holtgraves, a social psychologist, meets this challenge in an admirable fashion. The book's stated aim, as outlined in the introductory chapter "The Social Bases of Language and Linguistic Underpinnings of Social Behavior," is to approach the topic of language use as social action from an interdisciplinary viewpoint, and the material covered is an impressive, wide ranging synthesis of research from the fields of philosophy, linguistics, sociolinguistics, pragmatics, anthropology, and cognitive and social psychology. Fundamental to the approach taken is the reciprocal relationship between language and social context: How the social dimensions of language cannot be ignored and how social psychological processes are mediated by language. A chapter is devoted to each of five major themes of language use: language as action, language as interpersonal action, language as contextualized action, language as coordinated action, and language as thoughtful action.

Chapter One, "Speech Acts and Intentions: The Things We Do With Words," reviews the core aspects of speech act theory, starting with Austin's (1962) fundamental insight in explicating the pragmatic function of language, and moving onto a description of Searle's (1969) speech act taxonomy and felicity conditions. A discussion that may be of more interest to those already familiar with the basic tenets of speech act theory is intentionality. e.c. how hearers recognize illocutionary force is a problematic issue, particularly in the case of indirect speech acts, where the intended illocutionary force differs from the literal illocutionary force. Two contrasting approaches are considered: those that assume inferential processing, e.g., Grice's (1975) theory of conversational implicatures, and those that suggest a direct or idiomatic approach to recognition. Holtgraves observes that illocutionary force interpretation has been studied much less than illocutionary force production, and regards this lack of attention paid to the hearer as a deficit in speech act theory's social credentials.

Language as interpersonal action is addressed in the next two chapters. Chapter Two, "The Interpersonal Underpinnings of Talk: Face Management and Politeness," considers the interpersonal aspects of language production. A succinct review of Brown and Levinson's (1987) influential politeness theory model is provided, with a discussion of the concept of face, face-threatening acts, and the

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strategies used by interlocutors when they engage in face-work. Holtgraves then describes subsequent research in the areas where Brown and Levinson failed to provide sufficient evidence: the ordering of politeness strategies, the effect of social variables on politeness, and the conceptualization of face. He concludes that a gap exists in the literature on the possible role of politeness in language comprehension.

Turning away from language production, Chapter Three, "The Interpersonal Consequences of Talk: Impression Management and Person Perception," presents research on how language mediates two core concepts in social psychology: person perception (how we perceive others and vice versa) and impression management (how we strategically vary our talk to affect the perception that others have of us). Since verbal interactions are a prime source of information used in forming and managing impressions, Holtgraves contends that greater insight into these social psychological processes can be achieved if the language in such interactions is examined. He identifies two types of language variation that demonstrate his point. The first is social variation, where a language variable (e.g., accent) is linked to some form of group membership (e.g., social class) and so can be used in forming (possibly stereotypical) impressions. The second is stylistic variation, where, based on the associations above, speakers make linguistic choices to influence how others see them.

Chapter Four, "Conversational Structure," turns to language as collective action. In particular, the chapter underlines the importance of the sequential context of utterances and examines how interlocutors achieve coherence in their interactions through collaborative action. It deals primarily with the origins, methodology, and fundamental findings of Conversation Analysis (CA). According to the author, the major insight of CA is the principle of sequential implicativeness, since it foregrounds the significance of utterance context. This principle also contributes to the theories presented in earlier chapters of the book. For example, it adds to Grice's formulation of implicatures in that it specifies a particular instance—the absence of the second part of an adjacency pair—when inferencing may be triggered. Although not explicitly noted, CA's concern with demonstrating the mutual orientation of participants to the talk certainly addresses the lack of attention paid to the hearer in speech act theory. Overall, however, Holtgraves seems to be only lukewarm in his assessment of CA, contending that it has a limited contribution to make towards a *psychological* model of language production and comprehension because (a) CA does not address the potential interpersonal reasons for why conversational structure exists as it does, (b) the focus on talk alone ignores the psychological aspects of the interpretation process, and (c) the methodological stance leads to doubts about the realistic possibility of a purely inductive approach and the generalizability of findings. Arguably, the relevance of these points to the CA research agenda is questionable. Despite an endeavor to orientate to diverse research traditions, all researchers are perhaps inextricably tied to the biases of their own theoretical and epistemological backgrounds.

The theme of language as coordinated action is taken up in Chapter Five,

"Conversational Perspective Taking." This chapter discusses how utterance production and interpretation requires both speaker and recipient to take into account the other's perspective. Holtgraves summarizes the empirical evidence on perspective taking, and in interpreting the findings he suggests that mutual perspective taking is necessary for successful language use. He also suggests that such common ground, although difficult to document in empirical studies, is established and displayed in talk rather than being a precursor to interaction. Applied linguists may be particularly interested in how the author posits the central importance of perspective taking in the discussion of Gricean conversational maxims, politeness strategies, and intercultural (mis)communication.

The final theme, language as thoughtful action, is addressed in Chapter Six, "Language and Social Thought." This chapter examines the much-debated relationship between language and human cognition. Holtgraves shows how early empirical research on the Sapir-Whorf Hypothesis, particularly relating to the universality of color perception, led to the rejection of linguistic determinism. However, he goes on to argue that language plays a much greater role in the social cognitive domain of person perception via lexical choice constraints, the implicit causality effects of certain verbs, and conversational pragmatic principles. The reader with little background in social psychology may find this complex chapter the most challenging of the book, since some of the terms may be unfamiliar to outsiders. More explicit, fuller explanations would have been desirable. Nevertheless, through the tying of unfamiliar concepts to familiar issues in applied linguistics, the author ensures that the arguments presented are thought-provoking and relevant enough to encourage a sustained reader effort.

The concluding chapter, "Summary: Language as Social Action," begins with a useful integrative summary of the five themes and then returns to the fundamental ideas presented in the introduction. First, language use is of central importance to many social psychological processes, and their analyses can be illuminated by the use of linguistic concepts such as illocutionary force, implicatures, and adjacency pairs. Four core social psychological research areas (person perception and impression management, social reasoning, attitudes and prejudice, and aggression and altruism) in which research has shown, and could show, the centrality of language processes are examined. Second, recognition of the socially situated nature of interaction draws attention to the social (psychological) bases of language use. The author concludes that the interpersonal aspects of utterance comprehension and production cannot be ignored in research.

This is certainly an accessible and well-written book. It is more than a competent response to Holtgraves' own perceptive comment, "Language is truly an [*sic*] multidisciplinary topic; unfortunately it is not often an interdisciplinary topic" (p. 1). The author achieves clarity in explanation with insightful parallels and differences drawn between the different bodies of work. The stated aim of providing an interdisciplinary perspective on language use is achieved by enabling the reader to view familiar concepts and theories through a social psychological lens.

In terms of scope, Holtgraves does not cover the area of work that has become known as discourse analysis in social psychology (DASP), arguing that its primarily anti-experimental stance is in conflict with the book's openness to all methodologies. DASP (as described by Wood & Kroger, 2000) posits that psychological concepts of how people categorize the world should be understood through the discourse that produces them. Language is central in *constituting* psychological phenomena that have traditionally been thought of as individual and mental processes, and does not merely *reflect* those processes. For example, when you wrinkle up your nose or say "I hate spinach" when presented with a plate of spinach, neither action nor utterance merely reflects your underlying attitude (i.e., indicates a cognitive or mental structure), but instead your attitude is constituted in your utterance or action (Wood & Kroger). Given the centrality of language to DASP and the commonality of many of its assumptions and goals with the other approaches in this book, its inclusion would have been appropriate and welcomed. Furthermore, barring it on the grounds that it is anti-experimental could be questioned because CA also does not draw from experimental data. However, the decision not to include it is by no means a significant detraction from the book's quality or usefulness.

Considering the integrated nature of discussion throughout the book, it is probably best read from beginning to end rather than as a selective reading of chapters. It is highly recommended for students and researchers who wish to further their knowledge of the social psychological aspects of language use and for those interested in how an interdisciplinary awareness can foster new research questions.

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School's Out! Bridging Out-of-School Literacies with Classroom Practice Edited by Glynda A. Hull and Katherine Schultz. New York: Teacher's College Press, 2002, 288 pp.

Reviewed by Alison Trumbull
University of California, Los Angeles

School's Out! Bridging Out-of-School Literacies with Classroom Practice edited by Glynda A. Hull and Katherine Schultz raises important issues about teaching, learning, and defining literacy. The book assumes that traditional American school-based views of literacy are insufficient to address the needs of all learners. As a former public school teacher, I agree with this assumption. Indeed, few people would argue that all schools adequately serve all of their students. Among the problems with school-based literacy pedagogy is the top-down nature of our educational system, in which decisions about curriculum, materials, and indeed what constitutes literacy are often made by policy-makers and administrators out of touch with diverse student needs. A more specific problem is inconsistency, not only in the availability of materials, but also in teachers' use of them. While teaching in California, I was given an excellent reading program, but only a fraction of the materials and very little instruction in how to use them. Furthermore, I heard no discussion at either the district or the school level about how to integrate students' home literacy practices into use of the program. In education, adherence to tradition has degenerated into an ineffective pattern of pedagogy, and we need to reevaluate not only curriculum and learner needs, but also our ways of defining success in literacy. This new book by Hull and Schultz' performs such a reevaluation.

In each chapter, *School's Out!* touches on this need to reflect on schools' routine practices. The editors' aim is to introduce the concept of out-of-school literacy, as well as provide examples of how this theory is being implemented and fostered. These examples provide suggestions for concepts and practices that work, as well as some that have failed, provoking thought about how literacy researchers and practitioners might use the idea of out-of-school literacy in their own work.

The four parts of this book form a conversation about current research and programs in out-of-school literacy. In Part I, the editors provide a theoretical framework for the topic and illustrate it with six vignettes about people who, for various reasons, have struggled with traditional school-based literacy but find empowerment in their own innovative literacy practices. Parts II, III, and IV incorporate the work of many authors. Part II contains case studies of English language learners' individual literacy practices in Philadelphia and Chicago, while Part III presents adult-youth collaboration in after-school programs in Pittsburgh, Chicago, and the

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San Francisco Bay Area. Part IV summarizes and advances the challenges presented to conventional notions of literacy pedagogy. Each main article in Parts II, III, and IV is followed by brief responses from professionals in the field of literacy. This is an effective format. The collaboration of many authors allows for a fluid definition and exploration of the relatively new concept of moving pedagogy beyond traditional definitions of literacy. After a comprehensive introduction to the topic of out-of-school literacy practices, the articles about specific programs and individuals provide diverse examples of the benefits of fostering such practices, while the brief responses provide critical reflection on the ideas presented.

In Chapter One, the editors provide a theoretical basis for out-of-school literacy. They explain the three fields that have centrally influenced the conceptualization of literacy beyond the classroom: ethnography of communication, Vygotskian and activity theory, and New Literacy Studies. The editors demonstrate that the development of the ethnography of communication has been important because it has introduced the idea of looking at literacy beyond the classroom. They state that Vygotskian and activity theory perspectives are relevant to literacy studies because they lead to questions about how literacy and learning in school affect cognitive development. In addition, activity theory's broader definition of cognition has directed us to look for literacy beyond school walls. The field of New Literacy Studies focuses on literacy from a discourse perspective. Theorists in this field, such as Brian Street, have argued that schools' claim to "legitimate literacy" has marginalized literacy practices that occur outside classrooms. In this theoretical introduction, the editors provide comprehensible background material for readers who are unfamiliar with these theories, yet the information is succinct enough for researchers in these fields who are looking for a clear connection to their own work. In Chapter Two, the editors present six brief stories that raise several questions about the potential for after-school programs, community-based literacy, and personal literacy practices to inform how we teach literacy in school. The stories are particularly effective because the definition of the issues is articulated by the examples.

The remainder of the book serves to illustrate further the questions and challenges posed by the editors. Part II presents the importance of non-school literacy practices of English language learners. Ellen Skilton-Sylvester documents a Cambodian girl's literacy practices both in and out of an American school setting, while Juan C. Guerra and Marcia Farr offer insight into the personal writings of two Mexicanas living in Chicago. In both case studies, the authors recommend expanding our vision of academic literacy and looking for new methods of teaching literacy within school walls. Guerra and Farr make the important point that educators must value diverse backgrounds and cultural literacy practices while continuing to teach what they term "essayist literacy": academic writing competence. However, in her response, Julia Menard-Warwick points out that Guerra and Farr lack specific suggestions on how to bridge this literacy divide. I found Skilton-Sylvester's article similarly lacking: She does not clearly demonstrate how a student's talent

at drawing and dramatization can translate into improved academic writing. In her comments, Verda Delp notes that such talents indicate this student's need for more language instruction, which should in turn incorporate her individual interests and strengths. At the end of Part II, Kris Gutierrez's response reemphasizes the point of these case studies: Mutual understanding, often across different backgrounds and cultures, is the essence of communication and is therefore a key component to in-school success.

Part III, "Literacy in After-School Programs," begins with Chapter Five, Elenore Long, Wayne C. Peck, and Joyce A. Baskin's look at STRUGGLE, a computer-based literacy program at an urban community center. Teens and adults from the community collaborate on computers to create "life plans." This incredible program fosters not only writing skills and computer literacy, but also identity building and community building. The authors' clear presentation of this program allows the reader to see an important lesson—that literacy is important not for its own sake, but for its power to enact personal and cultural change. In Chapter Six, Gillian Dowley McNamee and Sarah Sivright present a study of the Fifth Dimension, an after-school computer program for children aged 7 to 13. A central aspect of this program is the Wizard, an imaginary magician who writes to the students and to whom they respond via e-mail. The authors clearly outline the foundations and goals of the program and provide background on the community in the children's own words. McNamee and Sivright are also upfront about the many limitations of the program, thus providing readers with a sense of the issues that can arise in after-school programs. The responses to this article are also relevant because they discuss specific problems. Chapter Seven, by Ellen Cushman and Chalon Emmons, describes a service learning course in which undergraduate students from the University of California at Berkeley worked with children at a Bay Area YMCA to build "hybrid literacies." This approach to literacy looks upon all expressions of reading and writing as equally valuable, which is a challenge to traditional academic literacy. Another meaningful message from this article is the importance of contact zones—spaces where groups and individuals who would not normally interact can collaborate to create new definitions of themselves and their shared community. In his response, Porfirio M. Loeza notes that schools themselves are contact zones; understood in this way, the lesson of hybrid literacies could have a direct effect on classrooms. Sarah Jewett praises the idea of hybrid literacies, but argues that such contact zones could bring about more effective change if the direction for cooperation lay within the community, not the university.

The final article and a response comprise Part IV. Elyse Eidman-Aadahl effectively brings together and analyzes the issues and challenges presented in the preceding chapters. She provides a brief history of some of the research, politics, and policies that have formed current ideas about literacy, youth, and non-school time in the United States. In addition, Eidman-Aadahl encourages a continued examination of not only how we define both literacy practices and what she calls "productive spaces,"[1] but also who does the defining. In her view, traditional power

holders must relinquish some authority and instead act as the co-agents of change under the direction of local communities. Eidman-Aadahl also points to federal grant programs and community-based nonprofit agencies as potential bridges between literacy in schools and the literacy work youth do outside of school. In her conclusion, Eidman-Aadahl reiterates the crucial question for all literacy practioners: Now that we have these ideas and understandings, how do we put them to use?

This book is a thought-provoking discussion of literacy, and all the issues raised are pertinent to the question of how our schools can better serve students at all levels. *School's Out! Bridging Out-of-School Literacies with Classroom Practice*, with its fresh look at out-of-school literacy, serves as an inspiration to literacy theorists and practitioners alike.

NOTE

[1] Eidman-Aadahl notes that young people have been gradually shut out of community spaces after school and are seen as not "productively" using the time they have after school in public spaces.

African American English: A Linguistic Introduction by Lisa J. Green. Cambridge: Cambridge University Press, 2002, xii+285 pp.

Reviewed by Jevon D. Hunter
University of California, Los Angeles

With a heartfelt analysis that encourages readers to re-examine their ideas about language education in general, Lisa Green presents a provocative discussion of African American English (AAE) in her recent book, *African American English: A Linguistic Introduction*. In this book, Green effectively argues that AAE is both systematic and rule-governed rather than a system of isolated features that historically have been characterized as "bad" English. Throughout the book it becomes quite clear that the author aligns herself with those researchers who advocate a level of legitimacy for AAE as a linguistic system. Green's approach successfully blends the theoretical rigors of academia (i.e., discourse analysis, sociolinguistics, and historical emergence) with the pragmatic concerns of language education (i.e., language acquisition, language assessment, and language use). Her end result is a text that argues for a re-thinking of teaching and learning methodologies to challenge current pedagogical approaches to language education. Therefore, the book is appropriate not only for courses that deal with language development, but also for students in teacher education programs who have an interest in literacy.

Green's chapter breakdown demonstrates well the blending of theory and practice. Chapters 1 through 4, for example, involve a discussion of the theoretical foundations of AAE study. Chapter One, "Lexicons and Meaning," focuses on the lexicon and semantics of AAE, affording the author an opportunity to discuss AAE as a system of word selection and meaning. Green contends that AAE lexicon is different from other English lexicons because of its reliance on verbal markers as indicators of how a particular event or action occurs. Her distinction offers a convenient segue into Chapter Two, "Syntax Part 1: Verbal Markers in AAE," which addresses the usage of verbal markers within AAE syntax. It is in this chapter that Green provides a detailed discussion of auxiliary verbs (e.g., *have*, *be*, *do*), aspectual markers (i.e., meaning that informs occurrence), and preverbal markers (e.g., *finna*, *steady*, and *come*). Chapter Three, "Syntax Part 2: Syntactic and Morphosyntactic Properties in AAE" and Chapter Four, "Phonology of AAE," conclude Green's structural analysis of AAE. Green's analyses up to this point challenge critics of AAE who view it as an improper, ungrammatical language whose speakers sound, generally speaking, inarticulate and unintelligent. Thus, by the end of the first four

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chapters, the author has adequately illuminated the general usage patterns of AAE that reveal it as a structured, linguistic system and not a form of English gone awry. Green recognizes, on the other hand, that it is not enough just to illustrate that AAE is syntactically and phonologically systematic and rule-governed. Indeed, to further support her argument of AAE as a rule- and pattern-governed linguistic system, Green delves into popular culture for assistance and explores AAE usage in speech acts, literature, and the media. For instance, Chapter Five, "Speech Events and Rules of Interaction in AAE," deals with such speech events and interactional situations as playing the dozens (i.e., hurling humorous and derisive insults at a person or group of people) or rolling the eyes (i.e., staring disapprovingly at a target, then quickly rolling the eyes by closing then opening the eye lids). By illustrating these speech events and rules of interaction, Green underscores the structure, meaning, and communicative competence inherent to both verbal and non-verbal African American linguistic activities.

Chapter Six, "AAE in Literature," covers the ways in which AAE in literature constructs character identity. Of particular interest is Green's discussion of *eye dialect*, a style of writing that presents the appearance of a character not associated with the dominant society, e.g., "Up dah, 'mong de Injins, chile" (Delany, 1970, p. 89). Moreover, the use of eye dialect in literature often signifies distinct social rankings and class statuses among its characters, illustrating both educational attainment and group socializing. Chapter Seven, "AAE in Media," discusses AAE in television and film. Green's goal in this chapter is "to consider the type of language that is associated with blackness and the images it is successful in creating" (p. 201). A shared trait that connects Chapters Five, Six, and Seven is Green's argument that AAE is a complex linguistic system that functions as a marker of social positions, ethnic identities, and socioeconomic status. Green, moreover, challenges the reader to understand the functions of this linguistic system not as a re-inscription of stereotypes, but rather as indicators of shared experiences that transcend human positionality.

Having discussed the academic analyses and popular usage of AAE within the introduction and Chapters One through Seven, Green has successfully laid a foundation for the eighth and final chapter, "Approaches, Attitudes and Education", a chapter dedicated to the pedagogical utility of AAE in classrooms. This discussion offers the most powerful and meaningful argument for the legitimization of AAE because of the author's ability to situate it within the proper academic context. For instance, Green spends a considerable amount of space recapitulating the arguments of those scholars who treat AAE as a culturally deficient linguistic system Most important, of course, is the attitude that accompanies the usage of AAE by people who speak standard English. There is a genuine concern to address the pragmatic limitations (i.e., employment and education opportunities) of AAE usage. Green acknowledges these limitations and shares some of the same concerns, but also points out that much of what critics of AAE emphasize devalues the knowledge the students bring with them into the classroom. Critics of AAE are not

the only culprits of this devaluing of knowledge: Educators are also complicit in this form of negative judgment when they employ language use as an assessment of intelligence and academic normalcy. Green calls to this group for a change in attitude and advocates passionately for the benefits of recognizing AAE as a linguistic system: "Teachers who know something about the children's native linguistic system are less likely to misclassify their grammatical linguistic patterns as mainstream English errors or disorders and are more likely to understand them as differences. As a result, they [teachers] will take these differences into consideration when teaching mainstream English" (p. 240).

Overall, Green has provided a clear presentation of the linguistic details of AAE and a strong argument for its inclusion as a legitimate language system. Indeed, Chapters Five through Seven, in my opinion, offer unlimited possibility for classroom discussion. Despite this endorsement, however, the text has shortcomings. One concerns the classroom teacher and the pragmatic ramifications of looking at language development from the perspective shaped by Green's suggested solutions. For instance, how would the implementation of her solutions function in schools where the district administration has been usurped and placed under state control due to testing underperformance? Green's argument would be stronger if she presented an actual school currently under state control, or perhaps under probation, whose academic success accorded to her proposed solutions. In this case the author could give actual, tangible results affecting the current state of school reform. As the situation stands now, Green's methods are a purely academic solution that provides no practical application. Another limitation lies in Green's methodology in presenting evidence. In an attempt to provide analytical balance, Green cites both critics and proponents of the legitimization of AAE, allowing plenty of space in her presentation for both sides of the argument. However, her balance fades when she fails to present examples of students of AAE who have achieved academic success despite consistently being *corrected* by their educators. The educational system is replete with examples of teachers who use methods of correction as a pedagogical practice, and Green's argument would be more valid if she offered examples of where this strategy was employed, and then discussed where its harmful effects have occurred.

The true strength of Green's book is her critical analysis of AAE as a rule-governed linguistic system and her call to shift normative paradigms of intelligence, teaching practice, and learning ability. Green's book is therefore appropriate not only for those interested in AAE, but also for those who envision a classroom atmosphere that validates the lived, oftentimes shared, experiences of students who are systematically marginalized by educators. To this end, Lisa J. Green's discussion of AAE does more than challenge us to consider the way we view AAE: It also forces us to reconsider how we envision education as a whole.

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